COMPUTERWORLD

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Power Man Cometh

Kansas Power and Light Co. is using one of the utility industry's first IBM 1287 optical readers for scanning hand printed meter readings directly into its computer. The insert shows a meter man recording power use figures. Tickets from the books are gathered and "read" by the 1287 eliminating the errors and delays of manual processing, according to IBM.

Regional Trade Shows Get First Test in N.Y.

By Drake Lundell
CW New York Bureau

NEW YORK, Jan 19 — The widely discussed idea of regional trade shows in the software and peripheral equipment areas will receive its first test here this week and pre-show information shows the idea balancing precariously between success and failure.

Sponsors of the Compso show, which runs Jan. 19 to Jan. 21 at the New York Hilton, report that all exhibit space is sold for the first of three planned shows, but CW learned that the exhibit space has been cut by more than 50 hooths from the original estimates.

One whole section of the exhibit hall originally slated to house exhibitors, has now been re-allocated and will be used for the seminar program. The area contained 36 individual booths and four large booths, in addition to two medium size booths.

Both potential and actual exhibitors are displaying mixed reactions to the show running from the wildly enthusiastic through those with a wait-and-see posture to those who don't think it will work.

Consolidated Software Inc is one of the firms convinced that the "regional approach is the right approach," especially for the software houses. The show will allow it to "see regional customers in the region," Stephen Deixler, the firm's Eastern regional manager, said.

Drexler also said that the New York City-based firm "preferred to stay out of the heavy hardware competition found at the Joint Computer Conferences. "The Compso idea is a good one," he added, "because the software houses need a place to display their wares and the computer user needs a place to see them."

Most firms in the industry, however, seem to be adopting a wait-and-see attitude about the shows. One source said, "If they can deliver all that they have promised for the shows, great, but can they?"

One of those firms conspicuously absent from the show will be Applied Data Research of Princeton, N.J. ADR is a leader in the field of proprietary program packages, and Richard Jones, ADR president, also heads the Association of Independent Software Companies.

Registration Outlined

The pre-registration figures for the show a week before the scheduled opening stood at about 3,500, according to Bernard Lane of Show World Inc., sponsor of the show. Registration for the seminars being held in conjuction with the exhibits was 600, he said.

Since Compso made "every effort ... to encourage pre-registration," these figures indicate that attendence at the show will fall far below the 10,000 optimistically predicted earlier.

At present, Lane indicated that 6,000 to 6,500 would be a good attendence figure. He said 6,000 would crowd the present exhibit area, even though the sponsors were still hoping to draw 10,000.

The real test of the regional show idea opens this week. If the exhibitors find they are reaching good markets through the shows they can be expected to expand in the future. But, if attendance is low and not of the right type, the future appears doubtful.

DP Innovator Fired—Alienated 'Preferred' Firms and Politicians

By Edward J Bride
CW Staff Writer

YONKERS, N.Y. Successful implementation of automated purchasing procedures apparently cost this city's purchasing agent his job.

The over-success of Thomas Grady's central supply and computerized purchasing system, according to a report by New York state investigators, saved the city thousands of dollars but alienated "preferred" businesses.

The report contends that "certain political officials" bowed to business and underworld pressures and abolished the municipal position of purchasing agent.

Conclusions of the State Commission of Investigation have just been made public, although sworn testimony is still being compiled and transcribed.

The report alleges Mafia tie-ins at the councilman level, and cites repeated instances of political influence and "other external sinister influences" as hindrances to "good government" in every sense of that term."

Grady has stayed out of government since his dismissal about two years ago, and now works as a programmer for a New Jersey software house.

One of the major projects of his now employer, Suburban Data, a subsidiary of CAI is the automation of the tax assessing and billing of nearly every municipality in the state.

Grady has a case now pending before the New York State Supreme Court, alleging that the Yonkers City Council abolished his position without due process. Grady claims that a budgetary act that is, specifically authorized position can not be abolished during a year for which its salary had been approved.

He did say, however, that the operation saved the city over $100,000 in its first year.

Missing Card Starts Off Georgia Welfare Fiasco

By E.F. Littrell
Special to Computerworld

ATLANTA, Ga. A single Cohol statement, omitted from the card source-deck of a program to computer welfare payments, resulted in issuance of 779 checks totaling $67,000 to persons who were not supposed to receive them. The error was greeted with the local headline, "Welfare Computer Makes $67,694 Slip."

William H. Burson, director of the Georgia State Dept. of Family and Children Services, said that the error occurred in the process of changing from a manual to a computer-assisted check-issuing system, implemented to speed checks to welfare recipients on the first day of the month.

Burson stated that, "The trouble was that the computer issued checks in July, 1969, to 779 recipients in the Aid to Families with Dependent Children Program whose aid had already been terminated."

The department discovered the error almost immediately and sent word to the 159 county welfare offices, where a recovery program was initiated immediately.

At last report on Dec. 1, 1969, $57,015 had been recovered, leaving $16,338 still outstanding.

Stopped Payments

Burson recently said he has stopped welfare payments to 27 families who have refused to return benefits mailed them by mistake, and stated that he may take similar action against other families.

The families were asked to sign agreements to repay the unauthorized money, and when they refused, Burson said he ordered their checks stopped. Burson noted that only 44 of 206 families have signed repayment agreements.

Georgia State Auditor Ernest B. Davis, in an official state audit for fiscal 1969, issued December 2, charged Burson with being directly responsible for the error in payments and also with not taking steps to prevent future errors.

Burson indicated that the error was a human error on the part of a computer programmer and in-

(Continued on Page 6)

Canadians Concerned Over U. S. Data Banks

By Pete Carr
CW Staff Writer

OTTAWA, Canada — Concern over the effects of U.S. data banks on Canadian citizens has been expressed by the Canadian Department of Communications.

A spokesman for the department said that the federal telecommission is investigating the implications for Canadians of storage of personal data about them in U.S. information systems.

An important consideration is the question of ownership and control of computer utilities, he said. There are no definite figures for the percentage of the computer utility market owned by Canadian companies, but it is thought to be less than 20%, he continued.

In addition, the telecommission is looking at the physical location of data banks, and an inventory of the data banks stored outside of Canada will eventually be compiled, he said.

In the case of a large number of Data Banks no problem arises, the spokesman said.

However, he continued, when banks that store what might be termed sensitive information of an economic nature, or statistics about Canada, a degree of control is lost because these banks

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NCR Unbundles Educational Services, Effective Jan. 13

DAYTON, Ohio – The National Cash Register Co. has announced the "educational services" facet of its recent unbundling [CW, Oct. 8, 1969], effective January 13, to users of its Century Series computers.

Under the new plan, all educational courses are priced separately. Each user, however, will receive a basic educational allowance as part of the rental or purchase price of his system and will pay extra only for educational services above that allowance.

A user of an NCR Century 100 basic system, for example, will receive an educational allowance of $2,250; for the user of a Century 200 basic system the allowance will be $3,150.

For each $1,000 of monthly rental above the rent paid for a basic system, or for each $50,000 of purchase price above the price of a basic system, the educational allowance will be increased by $450.

"This new policy offers a decided advantage to the customer in that he can determine in advance precisely how much educational assistance he will receive without extra cost," said Charles L. Keenoy, marketing vice-president.

"Also, it gives the customer great flexibility as to how his basic educational allowance can best be used to meet the needs of his operating personnel."

Some typical educational course prices under the new plan are: introduction to programming, $175; Neat/3, $450; operating software, $275; and Cobol, $450.

The user of an NCR Century 100 basic system, under the new plan, could have two members of his EDP staff take the first three courses and one take the Cobol course, all within the $2,250 allowance.

"Customers who have already placed orders for NCR Century Series computers will receive without extra cost, for the initial term of their rental contracts, all presently available educational services," Keenoy said.

The announcement of the pricing structure for educational services and its related customer allowances is the second made by NCR in the computer pricing area.

Last fall, the company announced a comparable pricing approach concerning the systems support it provides to computer customers.

Here, too, a basic level of assistance is included as part of the rental or purchase price (30 man-days of systems support for each $1,000 of monthly rental) with separate charges for systems support above that basic level.

"However, we intend to continue providing considerable software without any additional charges above the hardware rental or sales prices."

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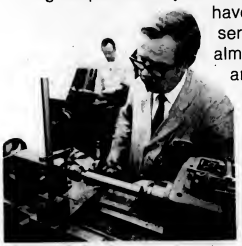
WHY WE STOCK PARTS FOR A VANISHING BUSINESS.

The unit record business is in such a state that it produces only about $500,000,000 in annual revenues in this country. Maybe only $600,000,000.

If that seems like a lot of money for a vanishing business, consider the fact that there are an estimated 600,000 punched card machines now in use at more than 40,000 installations.

A lot of equipment for a vanishing business. And it takes a lot to maintain our share of it. That's why we stock 16,000 parts, why we reconditioned over 3,000 machines during the past fiscal year, and that's why we have a customer service force of almost 1,000 men and more than 50 service offices.



Sometimes we wonder what it would be like in a business that wasn't vanishing. But after all this time we're used to it. People started waving handkerchiefs at the unit record business fifteen years ago when IBM brought out the 650. Then it was the 705. Now it's System/3 and we're getting the senior citizen treatment again.

Not that the unit record business hasn't changed. But changed is not gone. Punched card consumption keeps going up every year. Walk into just about any office and you'll find some familiar tabs and sorters and verifiers still churning away. Still doing the same jobs. Or doing new jobs, such as low-cost computer editing and back-up. Much as the IBM 1401 (remember when that vanished?) is now being used in support of more sophisticated computers.

And if you think the only people left in the unit record business are the brokers, you are invited to contact one of our sales representatives. He will assess your data processing needs and recommend the right machines for you. You can buy them outright, or you can rent them short or long term. Or both. However you choose to do it, you will probably end up saving money.

The new computers, those high-priced stars, are getting a very noisy reception. Which is as it should be.

But if you listen closely, beneath all the commotion you can hear the familiar sound of the punched card machines. Humming away, getting the work out. And, of course, needing attention. That's why we stock all those parts. They're very important in a vanishing business.

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Writ of 'Habeas Data' Advocated by Westin

By Edward J. Bride
CW Staff Writer

WASHINGTON, D.C. — A leading legal scholar has cautioned against reversing man's social progress through governmental pressure for "systematic information" and the "powerful technology of computers."

Alan F. Westin, professor of public law and government at Columbia University, told a computer symposium sponsored by Baltimore's Johns Hopkins University that a new "writ of habeas data" is required to insure individual rights in the computer age.

Westin commented that possibly the greatest legal device to facilitate the movement from subject to citizen in England was the writ of *habeas corpus*, the command of the courts to the Crown to produce the body of a person being held, and to justify his imprisonment.

"What we may need in the electronic age," he said, "is a writ of *habeas data*, commanding government and powerful private organizations to produce the data they have collected and are using to make judgements about an individual, and to justify their using it."

Westin cautioned, however, against over-correcting the privacy issue involved in creating data banks.

He said that there are "serious, social costs in *not* collecting and using information, as well as in collecting too much . . ."

Consumer advocate Ralph Nader was also on the panel, and he agreed that personal data files were needed in business and government. Nader concurred in Westin's thinking that abuse of these files must be avoided.

Westin added that the basic issues of "privacy and due process in record systems" is "aggravated" by computerization, "but not essentially created by this process."

He suggested several protective measures that might be taken in the 1970's, to ensure adequate collection and protection of data:

- Empirical studies of evolving data systems, "with attention to their procedures for protecting privacy and due process. . . ." He said the Computer Science and Engineering Board of the National Academy of Sciences plans to announce an effort in this area later this winter.
- Inquiry by various Congressional committees, "possibly some [of those] that have been paying attention to the social effects of new systems technology" or perhaps the proposed Select Committee of Rep. Cornelius Gallagher, to "monitor the side-effects of such technologies as the computerized data system."
- Action by regulatory agencies like the apparently imminent Telecommunications Agency which the President may appoint.
- Creation of a central registry for government and private data banks. The agency would serve as a "point of complaint" for citizens who thought their rights had been violated. The registry would record and control data used for credit, employment, and insurance investigations.
- Establishment of rules for privacy and due process in each type of computerized data system. In this regard, Westin said the burden of proof in justifying the collection of information is always on the collecting agency.

He added that the "use of private data for a purpose other than that for which it was originally obtained . . . ought to require the consent of the individual in most instances."

Due Process Over Privacy

Westin said that, if he had to choose between privacy and due process, he would prefer the latter, since the "visibility of the files to the individual and a contest procedure will be the most important safeguard against abuse."

Nader agreed that an individual's access to his file could result in corrections to inaccuracies.

Westin's address was part of the Hopkins-Brookings lecture series at the Johns Hopkins School of Advanced International Studies here.

The lectures are supported by grants from the Alfred P. Sloan Foundation and the American Federation of Information Processing Societies.

Future programs will feature appearances by Federal Communications Commissioner Nicholas Johnson, Harvard biologist George Wald, and Yale President Kingman Brewster Jr.

Materials prepared for the series and discussions at the meetings are being collected for a book to be published in late 1970 by the John Hopkins Press.

N.Y. Supreme Court Referee Sets Damages in Western Union Suit

NEW YORK, N.Y. — A Western Union customer has come a step closer to winning over $1 million in damages in a breach of contract suit [CW, June 12, 1968].

Law Research Service, Inc. (LRS) is the beneficiary of a New York State Supreme Court referee's decision stating that, since Western Union "totally" breached its contract, the company should pay $1,152,292 in compensatory damages and $180,000 in interest.

The court ruled 18 months ago that Western Union had breached the contract by failing to load data onto memory devices, delaying in supplying billing tapes, and, furthermore, had "drastically" raised its fees.

The referee's decision sets a payment recommendation, which a state judge is expected to take under advisement this week.

LRS said the decision indemnified it from claims of its customers, and that Western Union could be open to suits totaling $10 million.

A Western Union spokesman doubted this possibility, saying that LRS was still liable to its own customers.

LRS provides legal research services through a data base of state and federal court decisions, formerly stored in Western Union's computer.

The company said that, through the funds provided by this decision, plus other financing, it hoped to resume successful operations this year.

It reportedly had 140 franchises in 37 states, but all contracts were canceled by the referee's decision.

LRS said the franchises were worth $3.4 million, of which $2.6 million had been paid. According to the company, Western Union must pay LRS the remaining amount, and refund the $2.6 million to franchisees.

LRS had contracted for the services of Western Union's Information Services Computer Center here.

LRS stated it is now free to pursue a new contract with another company, to provide the same general type of service.

IBM Suitors Win Round

ST. PAUL, Minn. — Thousands of documents must be handed over to the four plaintiffs in the consolidated antitrust suit against IBM here [CW, Nov. 26, 1969].

Although no written order has been issued, a spokesman for Control Data, Applied Data) Research, Programmatics, and Data Processing Financial and General said that Judge Philip Neville's decision was that IBM would be required to provide the documents in question.

Included are a lengthy industry survey prepared when the Justice Department was contemplating suing IBM for anti-trust violations (it finally did early in 1969), certain marketing figures, and financial statements prepared in compliance with consent decrees signed by IBM.

The plaintiffs, in turn, will be ordered to provide IBM with several documents it had requested to assist in the pre-trial discovery proceedings.

Judge Neville is expected to issue a formal order shortly.

Details on the exact content of the various documents were not available.

The next hearing is expected in March or April.

Data Tape Unit Patented

HERKIMER, N.Y. — The multimillion dollar business of Mohawk Data Sciences Corp. was built largely on an invention that was just patented.

The device, called the Data-Recorder, enters information on magnetic tape for direct introduction into a computer. It eliminates the steps of first recording the data on punch cards and using a separate machine for verification.

The Data-Recorder was launched in 1965.

Canadians Show Concern

(Continued from Page 1)

are not located within the national boundaries.

Communications Minister Eric Kierans has said that he wants to introduce legislation next fall to regulate the data gathering and computer information industry.

This bill might require firms to store at least some of their information in Canada. If legislation regarding invasion of privacy by computer information systems were passed in Canada, such legislation would not apply outside the country.

If all data were stored in the U.S. privacy laws in Canada would be ineffective," and the country would lose a very definite degree of national sovereignty, the spokesman said.

With the growing integration of communications and computers this kind of development is a very natural one, and has an enormous number of benefits, such as hospital systems, which must not be underestimated, he stated.

The problem only arises when restricted or delicate areas are threatened, he said.

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Dropped Card at Georgia's Welfare Dept. Snowballs

(Continued from Page 1)

timated that politics were involved since the error occurred in fiscal 1970 and is not relevant to the 1969 audit.

Burson charged that Davis and State Attorney General Arthur K. Bolton were politically motivated in their criticisms. Both men have denied the charges.

In the fiscal 1969 audit of the Dept. of Family and Children Services, Davis comments, "This error was apparently the direct result of a change in operating procedure on check issuance in which the department eliminated essential controls over input to the data processing section.

Controls Eliminated

"These controls were eliminated over the written protest of the department's fiscal officer, Henry Jackson, which protest was documented with instances of substantial blunders which can occur when adequate controls are not maintained over computer input.

"The responsibility for implementation of the change in procedure was removed from the fiscal officer and assigned to personnel attached to the office of the director of the department. All of the directives establishing the procedures and setting deadlines came from that office. . . .

"To the date of this audit report," Davis continued, "the required adequate control over computer input has not been reestablished, and the department and the state are exposed to further errors similar in nature to the error made in checks dated July 1, 1969.

"To this extent, the department's internal control procedures are wholly unacceptable and will continue to be until adequate input control is reestablished and the responsibility for check issuance is placed in the hands of persons with fiscal orientation and knowledge of the state's fiscal procedures."

Davis further stated that, "As adequate controls over computer input have still not been established, it would appear doubtful that the state auditor could issue an unqualified opinion on the financial statements for the fiscal period ending June 30, 1969."

Sam Thurmond, chief of the data processing section, said "The error was basically due to the conversion from manual procedures to computer-based procedures. This was the first major change in the welfare payment process since 1937."

"Closed Cases"

According to Thurmond, "The error occurred on 'closed cases,' that is, cases which should have been deleted from the payment list. A human error occurred when a single instruction was dropped from a card source-deck. As a result, checks were issued on 779 cases which should have been terminated."

Thurmond further said, "The error was humanly impossible to catch. All balances were forced and there was no way to catch the error. The procedures in the welfare process then and at present are excellent in the area of program testing and meet the needs of a dynamic environment such as a welfare operation."

Burson named three staff members, Dick Bridges, assistant, state director for programs; Thurmond; and Henry Jackson to work with Davis to implement any necessary changes.

According to Bridges, "The error had no real effect on our procedures, in spite of all the front page coverage. The conversion eliminated 26 forms and saved the counties at least 5,000 man-hours in the first month, with expanding workloads and services.

"We have had nothing but compliments, in spite of the newspaper coverage. Besides the check issuing we have picked up the statistical workload of the counties, which had been handled manually."

"Welfare needs data processing to become more efficient and cost less for the taxpayer," according to Sam Thurmond, chief of the DP section at the Georgia State Dept. of Family and Children Services, in a related story on page 11.

Davis pointed out that, "The overpayment took place in July, everybody was aware of this, thousands of people. The newspaper coverage was done with some purpose, as the error was known prior to September, when the coverage first appeared. The newspapers covered only the error, not the benefits.

Thurmond pointed out that, "The 35 days from authorization to first check has been reduced to 7 to 10 days. The establishment of eligibility for Medicaid and Medicare occurs as much as a month sooner, which can amount to thousands of dollars.

And one of the biggest savings occurred in the very basic element in welfare, the case worker, the older system required the caseworker to be part of the clerical effort.

This effort has been reduced as much as one-half in some cases, giving the caseworker time to do more important work.

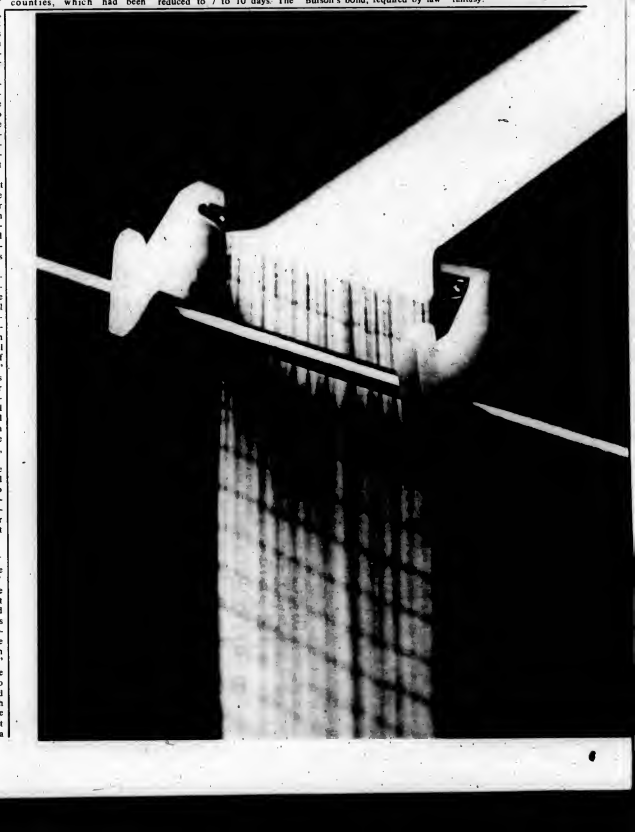
The Georgia department's Improved Benefits Issuance System (Ibis) has received favorable attention from welfare agencies around the nation as one of the most advanced in the field, according to Burson.

There has been talk of taking Burson's bond, required by law for him to keep his position, but the attempt was dropped. Burson said, "I think they (Davis and others) intended to proceed against me immediately until I pointed out they were dealing in 1970 funds."

The director said that reliable sources have told him another attempt against his bond will be made by his political enemies if he doesn't recover the missing funds by June 30, 1970, the end of the fiscal year.

Burson added, "But if I get the money back this fiscal year, there is nothing they can do, and I am making every effort to do just that."

According to Davis, "There has been no attempt to take Burson's bond. That is simply Burson's own statement and his own fantasy."



System/3 Not for Feds

GAITHERSBURG, Md. — Federal acquisition of IBM's relatively new System/3 equipment has been discouraged by the director of the National Bureau of Standard's Center for Computer Sciences and Technology.

Dr. H.R.J. Grosch said he advised the General Services Administration, which procures almost everything for the federal government, that a special waiver of a two-year-old presidential memorandum is needed before the government can purchase EDP equipment which does not have ASCII compatibility.

Grosch said that he intended to do everything he could to "dissuade the executives involved from waiving the presidential requirement."

System/3, IBM's new minicomputer with the 96-column card, is not compatible with ASCII, which was developed by the American National Standards Institute and the National Bureau of Standards.

IBM did not feel it "appropriate" to comment on Grosch's letter.

Grosch added that he hoped for development of additional capabilities and compatibility for System/3 but, until then, "I must advise strongly against bringing this equipment into the federal inventory."

Top Burroughs Officials Doubt Phase II Program Jeopardized by Budget Cuts

By a CW Staff Writer

PAOLI, Penn. — Top officials in Burroughs' Defense Division have shown something between casual concern and uncertainty over recommended cuts in the Air Force's Phase II program.

Reports had been circulating that the Air Force's program for base-level uniform data processing services might be in jeopardy.

But a company official told CW that lease arrangements would continue *status quo* before the recommended cuts. Furthermore, he said, purchases would continue for systems installed before the end of the current fiscal year.

Congress recommended cuts of $10.6 million in fiscal year 71, and Burroughs "assumes" that the cut is in the conversion area from leased to purchased equipment.

But neither the company nor the Air Force was certain. Current meetings between Burroughs and the Air Force should resolve the questions, but probably only after Congress has finalized its recommendations.

Burroughs said that the Air Force contract called for upward price revision of individual systems, if the number of B-3500 systems is to be reduced.

Harvard Sponsors Barred From Project Cambridge

CAMBRIDGE, Mass. — Liberal Harvard professors won a skirmish against Project Cambridge, but it appears unlikely to have any real effect on the project.

Project Cambridge is a Defense Department-funded research program on computer methods in the social and political sciences.

The joint MIT-Harvard project has come under attack from students and faculty because of its apparent orientation toward the study of communism and unrest in underdeveloped countries.

In the most recent action, Harvard officials decided that Harvard would not participate in the project as an institution. But individual professors are already participating in the project, and the Harvard decision will not end that involvement.

The only real effect of the decision, then, was to eliminate Harvard participation on the project advisory board and to bar official Harvard sponsorship. The decision was viewed as a victory for faculty liberals, but it will have no real impact on the conduct of the project.

The Harvard decision was made to avoid a confrontation at a faculty meeting last week.

Two proposals were to be presented: one to appoint members of the project advisory board; and the other to bar official Harvard participation. The sponsors of the two motions got together and agreed to mutual withdrawal. Thus, the faculty will never be asked to consider official Harvard participation in the project.

Israel Computerizes Law

RAMAT GAN, Israel — Israel's complicated legal system will be computerized at the Bar-Ilan University School of Law to simplify the training of law students.

It is the hope of the university to be able to feed into the computer laws and precedents as developed under the various systems: Jewish religious law, Roman and Napoleonic codes, and Anglo-Saxon jurisprudence. As a result, the researcher can find in a few views a particular case under investigation.

The first projects of the law school will be to investigate the relationship between law and the computer.

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Editorials

Self-Regulation Isn't Adequate

Data banks of personal information always pose a triple threat:

- The data may be used for improper purposes.
- The data may be processed in such a way as to mislead the recipient.
- Erroneous data may be accepted at face value by the recipient "because computers are never wrong."

The latest data bank called to our attention is one under development by an elementary school [page 25]. While we are sure the people working on it have only the best of intentions, we aren't at all convinced that their policies of self-regulation are enough.

For example, a boy who wet his pants in the first grade certainly doesn't want the information given to a prospective employer years later. He wouldn't even want his college instructors to have it.

We think laws, with stiff penalties for their violation, are needed. These laws would provide:

- Strict parameters for the release of data.
- Retension dates, after which the records would self-destruct or become unavailable.
- Warnings on all printouts if certain data was not gathered from reliable sources or if manipulation of the record was involved.

And we need these laws now, not after someone has been badly hurt by misuse or misinterpretation of personal data.

And Some Other Thoughts

In the name of individualized learning and reduced paperwork, an elementary school is compiling a data bank on its students.

Desirable though an individualized learning environment may be, its accomplishment by gathering previously uncollected family and socioeconomic data is questionable.

It is not a remote possibility that the system may serve to widen, rather than reduce, the gap between student and teacher.

For the teacher, it takes less time and effort to obtain a printed profile on a child than to cultivate a relationship of mutual understanding and respect with him. The printout might even be secured, and its contents digested, before teacher and student meet in September.

Further, each of us remembers school episodes when, confused and upset, we unburdened ourselves to a teacher. Looking back, however, we are justifiably glad that these confidences never found their way to a cumulative file where they could be retrieved, out of context, at some later date.

'Maybe He's Afraid We Might Learn Something'

Viewpoint: Technology Gap?

Computer Researchers Forced to Migrate

By Phyllis Huggins
CW West Coast Bureau

"I have never seen the research field in this technology in such a critical state. The cut-back in federal and state grants has produced a condition that can only be called chaos," according to a leading member of the computer community.

One university department head said that the only way he was able to get any funds was by deliberately exaggerating the results he expected to obtain.

Keith Uncapher, vice-president of Afips, commented on the seriousness of the situation. "The shortage of funds plus the lure of gains in private industry is causing an alarming number of research people to migrate to private industry.

"Computer technology is so vital to our economy and our technical progress that it should be considered a national resource.

"Industry, with its marketing orientation as opposed to the protected atmosphere of the research world, changes the environment for these people and seriously depletes this national resource.

"We all want to see growth in this industry. It cannot happen if we reduce the intellectual capital that we have to draw on in the future.

"The consequence may well be that we will be unable to meet the objectives that we all want."

Uncapher said he does not believe either industry or government fully realizes the importance of computer technology. "I'll believe industry is aware of it when there are vice-presidents of information processing."

Symptomatic of government's attitude is the make-up of President Nixon's office of science and technology. There is not one computer technologist in the group.

Cut-backs have been underway for two years but they have now reached the critical stage.

Uncapher expressed concern over the break-up of highly developed, multiskilled research teams.

"These teams are hard to put together, and you don't put another one together overnight. A relatively small group of rather young people has been responsible for the impact of computer technology.

"These well-trained, energetic minds should now be motivated to work on society's problems.

"A logic designer has skills that can be applied to problems other than computer design. The same applies to systems analysts and other research team-mates.

"They are pure intellectual capital and should be enriched so that our future can be enriched. Instead, we are depleting this national resource."

Uncapher suggested that this is one area where Afips could rise to the need of the community by bringing to the attention of industry and government the importance of computer technology in our future.

"Momentum that is lost in research is hard to regain. Computer technology is essential as an aid to solving the complex problems of society.

"These solutions can't come out of thin air."

If we let this industry become as one leader characterized its role in 1970 – "just a bunch of hucksters" – we are seriously handicapping our ability to meet and enhance the objectives of the future.

Letters to the Editor

Computer Contributions Have Been Unappreciated

I regard Mr. Hanlon's original article and subsequent response to his critics as showing abysmal lack of appreciation of the accomplishments of the computer profession.

I myself have not been a member of the computer profession and have in fact frequently spoken out frankly on certain limitations of computers. Nevertheless, it is incomprehensible to me that a supposedly informed individual could fail to be aware of the vast contributions that computers have already made in eliminating human drudgery and in enlarging the scope of human knowledge.

In my opinion Mr. Hanlon's "new Luddites" are as self-deluded and lacking in vision as were their antecedents in the 19th century.

H. Hurwitz Jr.
Schenectady, N.Y.

DPF&G Management Cutback In Los Angeles Clarified

I read with interest the article by Phyllis Huggins on page four of the Dec. 24, 1969, issue of CW entitled, "Cutbacks Foreseen in Service Areas." I agree with the essence of the story, particularly regarding its reference to the possibility that DPF&G is "...wiping out its entire software development business."

I would like to point out two errors which came to my attention. First, my name is spelled "Nolan"; and second, the statement that, "Last week Knowland (sic) and his entire staff in the Los Angeles office were eliminated," is not entirely correct. I resigned from DPF&G on December 8. Later that same week, DPF&G terminated all the key executives of Information Systems Company. This was accomplished without the usual notice of termination which should be afforded, in my opinion, to management personnel. It is quite possible that your readers would assume that DPF&G terminated me as well as the other personnel involved.

I am an avid reader of your publication, and have always appreciated your desire to be accurate and to the point. Therefore, I feel sure you will want to make some clarification of these points.

M. F. Nolan
Applied Cybernetics Corp.
Sunnyvale, Calif.

Viatron: Miracle or Mirage? - Part II

Basic System 21 is Useful Primarily for Source Data

By M.L. Stiefel
Special to Computerworld

What about that nationally trumpeted terminal that costs $39 a month? Can it do anything useful?

Yes, it can, but not much. And, in most instances, not by itself. This isn't as bad as it may sound. A user could say essentially the same thing about a keypunch machine.

The basic System 21 terminal has the usual logic, memory, keyboard, and two Viatape channels. That's it. The internal logic is relatively simple. No external input/output channels. No bells. No whistles.

What can a user do with it? He can gather data (sales, orders, shipments, hours worked, etc., etc., etc.) at the place and time where and when the data originates, on a formatted alphanumeric display. He can check the data visually, and then record it on Viatape.

What then? The user can retrieve the data and examine it on the display. If he discovers an error, it can be corrected. But the user can't retrieve quickly, unless he knows approximately where the record is located on the Viatape. Otherwise a more sophisticated search capability requires more logic (available for an additional $16 a month). If the user knows roughly where the record is on tape, he can begin a search in that area. Otherwise the microprocessor will step through the complete recorded Viatape, one record at a time.

The System 21 has sparked a continuing controversy since its announcement. However, little attention has been given to the capabilities of the equipment in relation to the prospective user.

This series of articles discusses the effectiveness of the equipment in specific applications.

If the user discovers an error, the incorrect portion of that field must be completely retyped. The user can't insert or delete a character easily.

The user can't automatically verify a record (by typing it twice, for automatic comparison) for $39 a month. For $55 a month he can (with additional logic).

Finally, there isn't any way to extract data from the Viatape without a System 21 terminal. The user can't use some other tape machine, because Viatape has been designed for Viatron equipment exclusively. So, if you want to mail a Viatape letter to a friend, she'd better have her own System 21 handy.

Alone, then, System 21 isn't much. But if it is used to capture source data which will be processed by other, more-elegant Viathings, then it becomes a convenient, inexpensive element in a data handling process. We will look at this contention in more detail when we consider the users who already have or use computers.

The specific applications for System 21 will be examined, based on the assumption that the terminal can be built, that it can be rented for the prices published by Viatron, and that the unit can operate in accordance with its advertised specifications.

The exact number of currently installed System 21 terminals is one of the best-kept secrets of the computer industry.

Despite the fact that some units have been delivered, the company is quoting 6 to 12 month delivery schedules from receipt of delivery.

M.L. Stiefel is an independent consultant in the area of systems design. He has had extensive computer peripheral experience.

Viatron System 21 in operation.

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FCC Will Rely on Consultant to Formulate Tariffs

By Ronald A. Frank
CW Communications Editor

WASHINGTON, D.C. – The Federal Communications Commission will rely on the recommendations of an independent communications consultant to formulate future tariffs concerning the interconnection of computers with the switched message telephone network.

An FCC spokesman told CW that Dittberner Associates had been retained to "assist the commission in analyzing the information developed in the technical conferences held on the subject of interconnection."

The National Academy of Sciences has been conducting a study exploring the technical aspects of interconnection to the telephone network. The study is being conducted by a panel of technical experts headed by Lewis S. Billig, technical director of communications at Mitre Corp. The NAS panel is scheduled to hand down its findings in May.

In elaborating on the specific role that Dittberner will perform, the FCC spokesman said the consultants "will have the freedom to recommend whatever they feel is pertinent" to solve the technical problems which apparently will be outlined in the NAS findings.

When asked whether the consultants are expected to recommend specific tariffs, the commission spokesman said that although "they will specifically provide the technical back-up for the commission to evaluate the NAS conclusions, they may well go into that [the tariff] area."

The Dittberner contract is expected to be carried out under the direction of Louis Feldner, a communications expert who has previously advised the FCC. The contract is expected to run for one year, and the commission source added that it was doubtful that any concrete accomplishments would be forthcoming before mid-summer.

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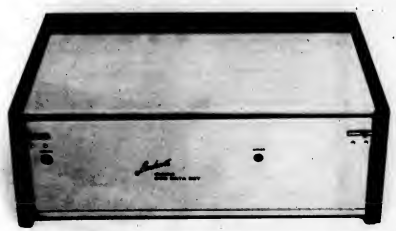

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The 26D can be arranged for simplex, half-duplex, or full-duplex operation. It will operate over any C2 conditioned voice channel. And it is fully competible with EIA standards, CCITT recommendations, and MIL standards.

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Bell Companies Plan Datrex Tariff Filings

NEW YORK – The American Telephone and Telegraph Co. has apparently instructed the operating companies within the Bell System to file tariffs covering the 10A Data Line Concentrator.

The device, which will be marketed as the Datrex service by the Bell System, allows up to 128 teletypewriters to have low-cost access to time-sharing computers, according to AT&T.

Communications

According to a Bell spokesman, a Datrex tariff has already been filed in Wisconsin, and other state tariff filings before the various public utility commissions are expected. In addition, the long lines department of Bell will soon present the Datrex service to the FCC for interstate tariff approval.

The 10A data concentrator has been operating for more than a year at Dartmouth College as part of the New Hampshire educational time-sharing network to schools and colleges. The Dartmouth test was approved under special assemblage provisions since at present the Datrex service has not yet been tariffed. Special assemblage provisions allow a common carrier to install non-tariffed items at individual user sites under specific contracts, usually as a test or interim installation.

IIA Requests FCC CATV Data Study

WASHINGTON, D.C. – The Information Industry Association (IIA) has asked the Federal Communications Commission to create a separate study of the potential of community antenna systems (CATV) and related broadband communications services for low-cost delivery of information products and services.

These technologies, according to the IIA, "offer the prospect that within the decade the cost of delivering to low-cost terminals in the home, school, and office, data tailored to the particular needs of individuals, at transmission speeds of a page per second or so as to be competitive with current postal rates."

The IIA position was presented in response to a series of questions raised by the FCC in its current CATV inquiry. The IIA contends that economic and social implications of modern information services as they relate to broadband communications (including CATV) involve issues significantly different from those involved in other FCC proceedings.

DP in Georgia Makes Welfare More Efficient

ATLANTA — An ideal climate exists in welfare today, and data processing needs to be developed around the climate, according to Sam Thurmond, chief of the data processing section of the Georgia State Dept. of Family and Children Services.

"Welfare has always been a little bit conservative, but current legislation has caused dramatic changes. Computer Technology is forcing welfare operations to become more efficient and hence to cost less."

Thurmond notes that there is a nationwide demonstration project going on, and indications are that Georgia has made significant progress compared to other states.

From an 8K IBM 1401 card system in 1965, his department has progressed to a 131K DOS 360/40.

The current system provides a central data base incorporating some 185,000 cases to be processed each month, averaging around 45,000 changes per month in the information connected to each case.

This data base is currently accessed by two CRT terminals, one on-site in the computer room, and another in a remote site.

Thurmond says that the system now has the capacity to serve a terminal device in any of the 159 counties in Georgia.

Thurmond will begin implementation of a plan to set up terminals locally, in the building and around Atlanta, this month, with this phase of the project to take 12 to 18 months.

Future plans call for establishing a remote terminal at each county welfare office in the state. These will give the county offices near instant information.

Thurmond says that the biggest achievement is the central record on a person, a standardized source of the pertinent information in a case, readily available to each county.

The data base also enables the welfare service to qualify recipients more rapidly, provides accounting information, and facilitates meeting federal requirements.

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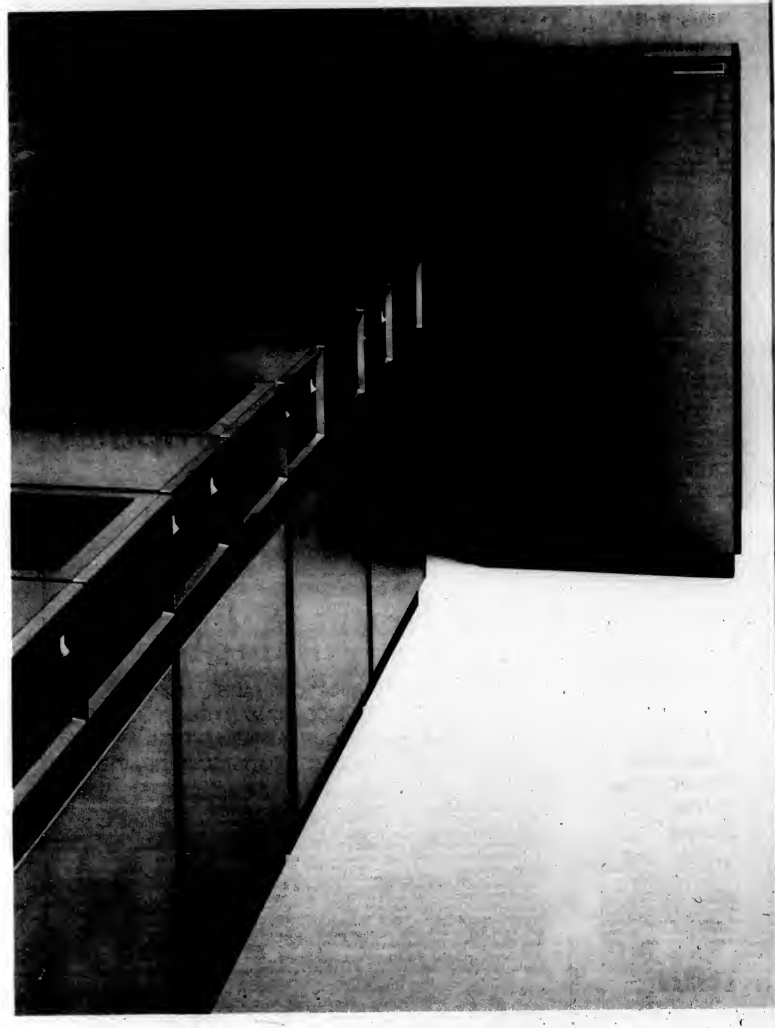

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New OS Utilities Reduce Most OS Job Control

WEBSTER, N.Y. – Data Set Dump, Update, and Map utility programs for OS/360 users can eliminate much of the control card preparation usually necessary to perform these functions with OS utility programs, according to Ronald Furman, president of Infodata Systems Inc., the developer. The utility packages are known as the Master series.

Data Set Dump

The Data Set Dump program can print or dump any OS data sets, including indexed-sequential, the company claims. (This indexed-sequential feature is not present in the comparable IBM utility.)

Output can be either character or character with parallel hexadecimal translation, and can be achieved either by logical or physical record.

Keys, for indexed-sequential records, can be printed and identified separately, according to Furman. The output can be converted into standard ASCII, another feature not present with the IBM utility, Furman said.

Update

The data set Update utility is intended for the creation and maintenance of source programs and other card-image files. Update does not handle Partitioned Data Sets (normally used for source program maintenance under OS).

Record insertion, deletion, replacement, or numbering can be accomplished with no form of control cards, the company stated: Card-to-disk and card-to-tape operations are said to be automatic.

As an option, a version can be bought that will handle fixed-length records with lengths other than 80 characters, according to Furman.

Map

Designed to list source libraries in partitioned data sets by modules, Map produces the same information normally available only from the Linkage Editor, according to the company.

The listing includes member names, aliases, entry points, control section names, core requirements, and full segment-length breakdowns, by module. Control cards are not required, according to the company.

The Data Set Dump program sells for $1,000, the Update program for $1,500, and the Map program for $2,000. The three packages can be purchased together for $3,500.

The company is located here at 680 Ridge Road.

Batch-Compatible Fortran IV/H Written on Time-Shared System

SPRINGFIELD, N.J. – OS/360 users can now develop and debug programs through a time-sharing system using the CP/67 (Cambridge monitor) software and a new package called FBug (Fortran debugging capability) from Virtual Computer Services Inc.

With FBug, the user can specify points at which program execution should be suspended. Fortran statement numbers are used as reference points. Using standard Fortran statements, the user can then modify and/or display the values assigned to Fortran variables, set up displays, and control the breakpoints with the indexes of Fortran DO-loops.

Output from the debugging runs can be directed to either data files or a terminal.

Special provisions available include virtual core memory from 256K to several million bytes. This allows the user to create very large programs and to retrieve huge blocks of data as part of Fortran arrays in COMMON.

Access to large tape or disk files is simplified, the company stated.

Full compatibility with Fortran IV Option 2 compilers with the extended error handling capability is provided for OS users. The user can develop a program under any level of Fortran, and then use the optimization feature of Fortran H to produce the final program.

Assembly Language routines may be directly invoked through Fortran, under FBug and CP/67, according to the company.

The firm offers the package free to users of its time-sharing service.

The company is located at 55 Morris Ave.

Bal-Fix Said to Reduce Most Debugging and Test Operations

NEW YORK – A $1,500 command language, Bal-Fix, which is said to enable a programmer to perform interactive debugging of AL programs on any IBM 360, is available from INA Systems Inc.

The Bal-Fix command language is said to reduce the time required to locate and correct programming errors and to make it possible for a programmer to do, in a few minutes, the same test operations that require several days in batch debugging, according to the company.

With Bal-Fix the programmer can interrupt the execution of this program at predetermined locations and selectively display the contents of the registers, control words, and core locations.

On the basis of this analysis, he can continue execution to the next program interrupt point and modify the contents of any register control word or core location or program additional interruptions, according to the company.

Ease of operation is quickly achieved, the company stated, via extensive, built-in, interactive features. For example, each Bal-Fix command has a range of error messages associated with it. The appropriate message is typed out on the console whenever a syntax error is made in a command, or when an unrecognizable command is entered.

The package is completely compatible with DOS or OS, the company stated. The package, comes as a card deck ready to be loaded into a system library.

Only one additional card is required at the beginning of the deck for a problem program. This card includes parameters which allow the presetting of up to 10 program interrupts at any desired locations in the program. Any program check will also activate Bal-Fix, the company stated.

Whenever the routine is entered, a message on the typewriter console notifies the programmer of the cause of the interrupt. The programmer then begins to interact with the system by issuing one or more commands. These commands allow him to inspect and/or modify any portion of the user's core, general purpose registers, or PSW.

The programmer can also, from the console, cause a fixed number of program instructions to be executed, re-enter the program at any desired location, or define additional program interrupts.

The package requires 6K of additional core over the program size, according to the firm. Company offices are located here at 12E. 86th St.

ISI Supports Ards-Type Terminals on Remote T/S

PORTLAND, Ore. – Software support for the Computer Display Inc. Ards graphic terminal, for terminals using the Tectronix Inc. T-4002 CRT tube, and Imlac Corp. displays has been developed for time-sharing use by Information Sciences, Inc.

Available to ISI's PDP-10 time-sharing subscribers, the software permits Fortran IV, Basic, and Macro-10 (the PDP-10 assembly language) users to issue direct commands to the CRT terminals.

For Fortran and Basic, the CALL verb, with X and Y coordinates of specific points on the display, allows the user to generate any type of graphic image including printing, vectors and curves, according to the company.

Multi-Speed Terminals

Because of the wide range of operating speeds possible with these CRT devices, ISI offers several different connection speeds: 10 char/sec, 15 char/sec, 30 char/sec, and 120 char/sec.

A different telephone number is involved for each speed. With the Ards unit, for example, a user can connect at anything from 10 char/sec to 120 char/sec.

The service is offered from the company's offices here at 100 Southwest Market St., Suite 100.

'Exapt' Available Through Remote-Access

LA JOLLA, Calif. – The Exapt systems for numerically controlled (NC) machines are available to American and Canadian users through Systems, Science and Software's (S^3) computing center.

The systems, which apply to the entire NC field, particularly emphasize numerical programming of drills and lathes, according to S^3.

Unlike earlier systems which required an NC programmer to supply a detailed description of each cut, together with such associated data as feeds and speeds, these systems automatically determine the proper tool, the machining sequence, and the tool feed rates, according the company.

Exapt's simplicity of operation and ability to handle difficult configurations have led to extensive use in Europe, the firm stated.

The system is currently available for use with IBM, Univac, and CDC equipment; it will soon be implemented on other equipment, the firm claims.

S^3 enrolls users in Exapt Association, distributes documentation, trains part programmers, implements systems including tool and material files, trains computer programmers, and conducts annual meetings, a spokesman said.

The company's computing center is currently running Exapt on its Univac 1108.

The firm is located at 11661 Sorrento Valley Road.

New Application Package 'Taps' Accounting Resources

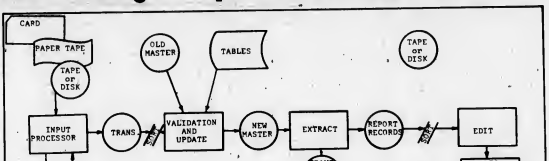
BOSTON – An accounting package for banks and computer service operations called Tap (The Accounting Package) is now available for the S/360 with at least 64K memory from Cullinane Corp.

Basic system features include accounts payable, accounts receivable, general ledger accounting with budget comparisons, sales analysis, and check reconciliation, according to the company.

This integrated system allows service operations to introduce their customers to the various parts of the system one at a time, while actually using a single system for all the work, the company stated.

Tap features a one-pass multicompany file with company detail information stored in separate data tables. Alternate processing routines and reports controlled by input parameters permit a high degree of flexibility in program operation, according to the company.

The programs are written in Assembly Language and are compatible with the RCA Spectra/70 systems, the company claims. Initial installations are scheduled for the first quarter of this year from the company's offices at 60 State St.



The flowchart describes the processing cycle for the Cullinane Tap (The Accounting Package) system. The ability to extract multiple reports and functions from one pass of the data file is considered to be an important benefit of this approach.

Input Verification Helps URS Accounts Receivable Program

SAN MATEO, Calif. – An accounts payable program is available from URS Data Sciences Co. The program is designed to provide efficient processing of transactions and prepare reports for effective management of company funds, according to the company.

According to URS, companies having several operating divisions or separate plant locations will find the program particularly suited to their needs.

Program features include:

- Improved input verification and control.
- Effective control of monetary obligations.
- Cash requirements projections.
- Automatic payment following approval.
- Management information and control reports.
- Single or multiple company processing.
- Interfaces with other accounting functions.

The program is written entirely in Cobol and runs on a 360 with 64K under DOS. The peripheral configuration is variable, requiring minimum operator intervention if six tape drives and two disk drives are used.

Price for this package is $6,000, or it may be leased for $200 per month with 75% of the monthly payment credited toward the purchase.

The company is located at 1700 South El Camino Real.

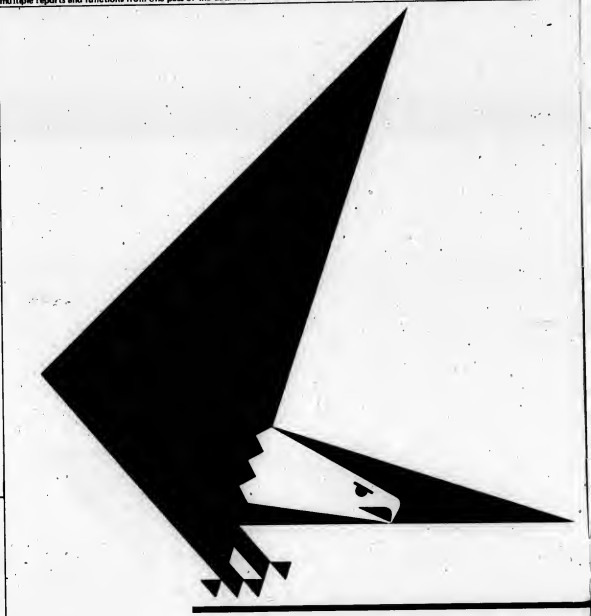
'Insta-Tax' Prepares Time-Shared Income Tax Reporting Forms

ANN ARBOR, Mich. – Insta-Tax, a program for calculating individual income tax for the 1969 tax year, has been released by Shared Applications Inc.

The Insta-Tax program performs all calculations required for the 1040 form and associated schedules, according to the company.

Utilizing time-sharing, the package allows tax services, CPA firms, and other specialists to prepare accurate returns in minutes within their own offices. The returns are prepared in finished format ready for filing.

The company's offices are located here at 209 E. Washington.



'H-S Grasp' Improves CDC Optical-Reader Flexibility

MINNEAPOLIS, Minn. – Two software packages are being offered by Control Data Corp. for use with its 915 Page Reader systems.

The High Speed Grasp (Generalized Read And Simulate Program) gives OCR users higher throughput cababilities that afe generally faster and more efficient than similarly designed programs, according to CDC.

Grasp is a flexible computer program that allows users to capture data for computer processing. High Speed Grasp is designed to read documents, validate and format the input data contained on the documents, and write the output on magnetic tape at maximum throughput rates.

Grasp uses a series of typed parameters to recognize the documents read by the 915 Page Reader.

These parameters define the physical document format and control characters and output format. The software reads one input record at a time from the document. A record may be longer than (but not less than) one line.

Operating with an 8092B Teleprogrammer and the 915 Page Reader, the High Speed Grasp program allows input/output data formats of the user's choice, and provides flexible editing, data manipulation and code conversion capabilities.

The second software package, a keypunch simulator program, obtains data from pages typed in the standard "A" font of the American National Standards Institute (Ansi) and converts the data into punched card images that are recorded on magnetic tape.

The keypunch simulator is capable of verifying and justifying the typed input data, filling in blanks in the data and providing for the duplication of character positions from a previous record.

A record consists of 80 characters, which corresponds to the data contained on a punched card. This program simplifies conversions to OCR systems from punched card operations.

The simulator reads the specified documents from the 915 Page Reader according to the format defined, performs the requested data manipulation and editing and writes the data on magnetic tape.

Interactive Statistics

'Allstat' Does Batch/Interactive Data Evaluation

NEW YORK – A system which is said to permit a wide range of statistical data analyses on any IBM 360 without the need for additional programming has been developed by PDA Systems Inc.

Called Allstat, the system has the ability to switch between batch and interactive operations via a typewriter console. The user can specify the preliminary processing of data, observe the partial results on either a line printer or a typewriter console, and specify subsequent processing by entering simple Allstat instructions on the console, according to the firm.

The package contains its own input routines for building a data file on disk and a monitor system which controls the sequence of mathematical data transformations and statistical analysis operations, according to PDA.

The library also includes one- and two-way analysis of variance, Chi-square test, least square approximation, multiple regression, factor analysis, correlation matrix techniques, and scattergram techniques. Provision is said to be made for adding user-supplied routines to the Allstat library.

No programming knowledge is required or assumed on the part of the Allstat user, the company claims. An array of prompting and error messages has been included in the system. In most cases, the company says, syntax and other errors can be corrected via the typewriter console.

Two versions of Allstat are available. The OS/DOS version sells for $8,500 and requires a 64K 360 with at least Fortran F. A time-sharing version is also available, but the price is negotiable depending on interface requirements, the company said.

The company is located here at 12 E. 86th St.

New Competitor Makes Datatext-Compatible T/S System Available

VAN NUYS, Calif. – A text editing system, called ATS/360, parallels and is entirely compatible with the Datatext service which IBM has discontinued, according to Marquardt's APL Computing Services, IBM supplies ATS.

ATS/360 is said to provide remote entry batch processing, allowing customers to utilize their own programs in languages such as Fortran, Cobol, PL/1 or GPSS.

A series of multiplexers makes ATS/360 available to customers in the San Francisco, San Diego, Chicago, and Los Angeles areas.

Conversion to ATS/360 is said by the company to be as simple as APL.

The company is located at 16555 Saticoy St.

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CSI Service Integrates All Stages of Order Processing

HOLLAND PATENT, N.Y. – An information service to integrate order entry and all stages of order processing through final invoicing is being offered by Computer Services International (CSI), a division of Pope Industries Inc., customers.

Data Base Oriented

The system works around a data base developed and tailored to each customer, the company stated. The system is accessed through any normal type of terminal, and data communications are furnished without cost within the eastern United States and in major metropolitan areas around the country, according to a company spokesman.

Billing is done entirely on a usage basis, the firm says. There are no minimum charges. The only fixed costs are said to be those associated with the input terminal.

Terminals can be obtained from CSI, or from any other terminal supplier such as the telephone company.

Input to the system comes through a highly simplified formatting process. Instead of entering redundant data for multiple entries, a block number that describes a specific input form is entered.

The data alone is typed in to fill out this phantom "form." For instance, if a part number is ordered by one customer only, it might be necessary to enter only the part number, the quantity, and the delivery due date, the company stated.

The system would then produce the complete order form, including relevant names and addresses, amounts, discounts, etc. Parts explosions, where desired, can be generated automatically on the invoices, and the user can update such permanent data as easily as he enters the order information, the company claims.

Related functions such as invoicing and inventory control can be performed automatically, according to the company. The company address is Holland Patent, N.Y.

Upgrade Guarantees Conversion at Under $1/Stmt.

SAN FRANCISCO – Upgrade program users can now replace the existing Autocoder or SPS data or statement names with any desired Cobol names during conversions, according to Information Management Inc., which is offering the service.

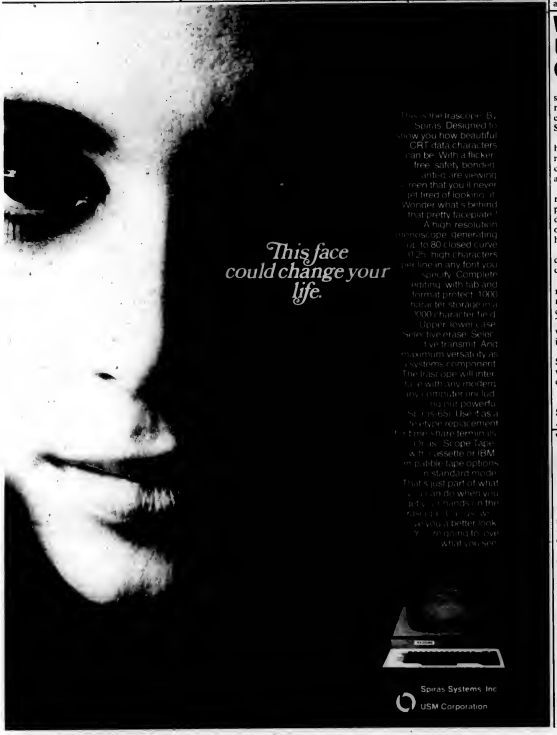
Called Upgrade, the translator service for getting 1401, 1440, or 1460 programs converted to 360 Cobol, will translate with a guaranteed 100% completion when operated against benchmark test data, the company stated.

100% conversion costs between 50 cents and $1 per source statement, depending on program size and desired degree of conversion. A new name-substitution option adds four cents per source statement to the cost.

Since the actual translation is done from the object deck rather than the source deck, programs with patches and without listings can be converted easily, the company says. As soon as the disassembled program is produced, the new list of names is prepared by the customer.

Original outputs of the conversion service include flowcharts and cross-reference listings. Standard outputs include clean Cobol listing and source deck, complete 1401 listings, and SPS format post list of the disassembled 1401 program, an instruction count by type, a file description list, a work file list, and a user's manual.

The company's offices are located here at 447 Battery St.



With General Ledger Users Can Determine Codes and Sequences

LOS ANGELES – A general ledger system that allows a user to forecast and measure financial progress within his company is now available from Ancom Systems.

The system is said to integrate forecasts, budgets, and actual performance into a reporting system that will isolate "out of control" situations requiring corrective action.

The system can prepare reports for multiple divisions and multiple companies, according to the firm. Where desired, information from such divisions or companies can be consolidated at higher levels.

Analysis reports can be prepared for the departmental, divisional, or operating company level.

No preformatted numbering scheme is required, the company claims. Account numbers, organizational coding, and their descriptions can be assigned by the user. These codes and descriptions are alterable, without additional programming, according to the firm.

The system is written in Cobol for the S/360. It requires a minimum of 32K with at least four peripheral devices, one of which must be a disk.

The system sells for $7,500.

The company, a division of Republic Systems, has its offices here at 9841 Airport Blvd., Tenth Floor.

'Casper' the Friendly Translator-This One Is Not at all Ghostly

SAN RAFAEL, Calif. – A conversion service for translating IBM 1400 Autocoder programs to Cobol is available from Computer Advisory Services, Inc.

The conversion package – known as Casper – is kept resident on a time-sharing computer. Conversational techniques allow for logic evaluation, translation and checkout.

Pricing of the service depends on the volume of work and the degree of completion required by clients. One hundred percent conversion on small orders will be handled for 59 cents per IBM 1400 Autocoder or SPS source statement, where the client assumes responsibility for file conversions, system integration and final checkout.

Casper is scheduled for early 1970 installation in Los Angeles, Chicago and New York offices of CAS. The company is located here at 710 "C" St.

Polaroid Camera Device Creates CRT Display Prints 'Instantly'

CAMBRIDGE, Mass. – A camera said to produce low-cost photographs from displayed CRT images in 15 seconds, has been developed by the Polaroid Corp.

The device copies images from CRT screens in a fraction of a second and produces high-contrast, 3-1/4- by 4-1/4-in. black-and-white photographs, according to the company.

The main components of the device are the Polaroid CU-5 Land camera and a light-tight plastic hood that snaps onto the front of the camera to shield ambient light.

To make on-the-spot photographs with the CU-5 camera, the user places the hood against the CRT screen and squeezes the shutter release.

The shutter speed and lens opening will vary from terminal to terminal depending on the brightness of the display. The device may be used with most popular screen sizes, according to the company.

Any number of terminals can be serviced by a single CU-5 camera, according to the company. If color prints are desired, Polaroid color film can be used to produce color prints in 60 seconds.

The suggested list price for the device is less than $300. Delivery is on a 30-day basis, the firm stated.

Polaroid Corp. is located at 549 Technology Square.

Polaroid unit, composed of camera and hood, produces prints from CRT screen images

dp accessories

Daprospeed Tape Winder-Dispenser Has Foot Control

WESTPORT, Conn. – A paper tape winder-dispenser from PCA of England features a horizontal electric tape winder, foot-controller, and a built-in tape dispenser, mounted on a common base.

Designated Daprospeed, the device is said to keep an operator's hands free for manipulation of the tape. Variable speed control permits either rapid winding (30 seconds for an 8-in. reel from end to end), or start-and-stop operation, for inspection, editing, correction, and splicing.

The Daprospeed is priced at $139.50.

The device is available from Jay Smith Inc., 292 State Street East, here.

IBM-Compatible Disk Cartridge Offered From 3M

ST. PAUL, Minn. – A disk cartridge for use on the IBM 360/44, systems 1130 and 1800 and single disk drives compatible with these systems has been developed by 3M Company.

The device – designated the 901 disk cartridge – is immediately available although the company will not quote the price at this time.

3M Company, Marketing Services Dept., is located at the 3M Center here.

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Friden 4300 Key-to-Tape Intended for Larger User

NEW YORK – Called a systems approach to recording source data directly on computer-compatible magnetic tape, the 4300 Magnetic Data Recording System by the Friden Division of the Singer Company is aimed at medium- and large-scale computer installations.

The 4300 is a modular system that is said by Singer to grow or change in size and scope with a company's needs. The system is operator-oriented without a complex keyboard or difficult codes to translate, according to Singer. All data is entered through a conventional keypunch keyboard and displayed in English or a comparable foreign language, Singer said.

4301 Data Recorder

The basic component of the Singer system is the 4301 Magnetic Data Recorder which is a stand-alone unit that is said to perform all the functions of a keypunch and a verifier, but with expanded capabilities. The unit can be cable-connected to a Central Pooler or can be equipped with a pooling adapter. The 4301 produces computer-compatible magnetic tape in 200, 556, or 800 bit/in. in either seven- or nine-track recording.

Variable record lengths from 20 to 200 characters are available and status is displayed to provide data for complete operator control at all times. As a record is being keyed, each character is placed in an electronic buffer and it can be erased to correct an error prior to recording on magnetic tape, according to the company.

When used as a pooler, the 4301 can accept up to eight 4301s or 4302s in any combination. The unit may be purchased for $7,000 in the seven-track unit or $8,000 for a nine-track machine – or leased from one to three years at prices starting at $130 a month.

4302 Magnetic Data Keyboard

The 4302 Magnetic Data Keyboard is claimed to be useful in application environments where repetitive jobs do not require verification or when records are keyed and immediately key-verified by the operator prior to recording the final tape.

The 4302 eliminates the precision high-density recorder used in the 4301, but retains all other operating features. The device has the same keyboard, display console and an electronic buffer which stores each character as a record is being composed. The stored record is transmitted in "burst" mode to a central recorder at many times the speed of keyboard operation. Singer says that the versatility of the system is such that each operator is able to function as if she had exclusive use of the central recorder unit which may be a specially equipped 4301 or a larger 4303 or 4304 Magnetic Data Central Pooler.

systems/ peripherals

The 4302 may be purchased for $4,500 or leased from one to three years at prices starting at $85 a month.

4303 Magnetic Data Central Pooler

The 4303 Magnetic Data Central Pooler accepts up to 16 4301s or 4302s in

4303 Pooler and 4302 Keyboard

any combination. According to Singer, the 4303 operates three different ways; data entry can be recorded directly when verification is not required, the 4302 may be programmed to force the operator to verify each record after the data has been entered, or each record may be pooled after verification when the data has been previously recorded and released from the 4301.

The 4303 can accommodate 10-1/2 in. tape reels with 2400 feet of available recording area. The standard format is nine-track 800 bit/in. density with all necessary gaps and tape marks that Singer says insure computer compatibility. In addition, seven-track formatting with densities of 200, 556, and 800 bit/in. are available.

The 4303 may be purchased at $10,500 for seven-track or $13,500 for nine-track. Lease rates from one to three years start at $205 a month.

4303 Magnetic Data Central Pooler

The 4304 Magnetic Data Central Pooler is identical in design and operation to the 4303 central pooler, except it has expanded internal electronics which enable it to handle up to 64 remote terminals.

The 4303 may be purchased at $12,500, for a seven-track unit or $17,500 for a nine-track device. Lease rates for one, two or three years start at $230 a month.

The 4301, 4303, and 4304 pooler units are rated at capacities of eight, 16 and 64 input keyboards, respectively, according to Singer.

Initial deliveries are scheduled in April.

$1,400 Portable Terminal Prints Upper and Lower Case Characters

LEVITTOWN, Pa. – A portable teletypewriter which prints upper and lower case characters with an optional built-in acoustic coupler for computer interaction is being offered by DataTerm Inc.

The device, an SCM electric typewriter modified to perform control functions, generates a full ASCII character code set, the company stated. Input/output rates are 10 and 15 char/sec with operator selection switch optional.

As a computing terminal, the device interacts with a teletypewriter interface over standard telephone lines in full or half duplex modes.

The machine prints black/red send/receive copy on roll paper, 80 or 132 characters per line, with full upper/lower case capabilities, according to the company.

Additional control functions can be added, and local mode is available for use as an office typewriter or keyboard data-entry machine.

Price of the terminal, without the acoustic coupler, is around $1,400. With the coupler it will sell for around $1,600. Lease terms can be arranged, according to the firm.

DataTerm Inc. is located at 1611 Manning Blvd.

COMPUTERWORLD

systems/peripherals

DEC Printer, Card Readers, Disk Designed for PDP-8

MAYNARD, Mass. Three peripherals for the PDP-8 line of computers will be available in the spring from Digital Equipment Corp. The equipment includes a low-cost line-printer, an optional card reader and a high-speed disk.

The line printer, designated the LP08, features an 80-column format and a print speed of 356 lines per minute, according to the company.

The 64-character set version of the LP08 is priced at $12,000. The LP08 is also available with a 96-character drum. Deliveries are sheduled to begin in April.

The mark sense card readers, the CM8/I, and the CM8/II have a total speed of 200 cards per minute, and can read mark sense 12-row, 80-column punched cards with clock marks, the company said. No special pencil is needed for mark sense recognition, the company stated.

The optical character readers are compatible with existing PDP-8 family controllers and software. The units will cost $4,900, including interface, and are scheduled for May availability, according to the company.

The high-speed disk, the DF32D uses integrated circuitry and is available for either positive or negative bus PDP-8 computers. The disk has a capacity of 32K 12-bit words, with an average access time of 16.67 msec for 60-cycle power.

The disk has a transfer rate of 33 μsec per word, twice that of previous models, according to the company. First delivery of the 56,000 unit is scheduled for May.

The company said that the three peripherals were the first in a series which DEC will introduce during the next few months, and that the peripherals will be available for the new PDP-11 line in addition to the PDP-8 family.

Digital Equipment Corp. is located at 146 Main St. here.

Com Unit Prints and Plots On Microfilm, Microfiche

VAN NUYS, Calif. A Computer Output Microfilm (Com) Printer/Plotter system offered from the Graphics System Division of University Computing Co. features modular construction.

Designated the Model 300-3, the microfilmer is said to print and plot at speeds up to 200 pages a minute. The 300-3 accepts any tape format via a unique patchboard panel and code plug system, according to the company.

The system can record on either roll or microfiche formats with a Multiformat camera that handles 16-, 35-, or 105-mm films. (Other cameras are available that can be changed without system modification, the company reported.)

A magnetic tape input capability handles seven-track (556 or 800 bit/in. with odd or even parity), and nine-track (800 or 1600 bit/in. with even parity).

The 300-3 has a standard read capability and optional retrieval coding. Forms projection and an error void capability are provided, according to the company.

Additional optional features include: frame butting, additional character sets and special selectors, such as recorded length, line length, print delay, code control and frames required. An audible error alarm is also optionally available.

The price for the basic unit is $139,000; maintenance is additional. A one-year lease which includes maintenance is $4,559/month. Service is available nationwide, the firm stated. Deliveries are being made on a 150-day schedule.

The Graphics System Division of University Computing Co. is located at 14761 Califa St.

Computer Terminal Transmits, and Also Rings Up Retail Sales

SANTEE, Calif. A device available from Information Machines Corp. looks and functions like a cash register but is actually a computer terminal.

Called Registron, the device records details of sales in a single pass on magnetic tape or directly to a computer.

Bernard Edelman, IMC president, admits that the smallest retail operation that could make profitable use of Registron would have to be doing $2-1/2 to $3 million a year in sales.

Registron Terminal

Optional accessories to Registron include a plastic credit card reader, a merchandise ticket reader, and a data printer for hard copy verification.

IMC will provide interface or translation equipment for conventional computers, at added costs. Companies without computers may use IMC's off-line recording service, a spokesman said.

The average purchase price of Registron is $3,500, which includes installation and a one-year maintenance warranty. Delivery is 60 to 90 days. Service is available throughout the country.

Information Machines Corp. is located at 8024 John Tower Ave.

Stop Computer Errors!

Data Processing errors are often caused by line voltage fluctuations. No more wasting costly computer time hunting for data and program errors or nonexistent equipment problems. The DRC Voltage Transient Monitor continuously monitors power lines for these costly fluctuations . . . sounding a warning when one occurs, and permanently recording the amplitude, duration and time of occurrence.

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Ray Work of NCI reports on

Ray Work, President of NCI

"It was an action year right from the beginning. New NCI computer languages, new data center ideas, and new contract services.

"Then, some of the great DP marketing, systems and business geniuses came over to see what was happening. They liked what they saw. And they stayed.

"We added new offices in Houston, Atlanta, Pittsburgh, Denver and New York to go with our existing offices in San Francisco, Los Angeles, Dallas, Chicago and Phoenix. And we staffed them strongly with local systems engineers teamed with local marketing representatives.

"Our staff increased over fourfold between January and December. Including marketing reps, systems engineers, R&D specialists, computer operations personnel and full-time people working on contract services. A handful with PhD degrees, an armful with Masters', and a companyful with Bachelors'. Every one with great computer industry and business experience. Including everything from top programmers to those who served on Boards of Directors. With a few who had climbed every step in between."

AND THOSE WONDERFUL NEW PRODUCTS

"RSVP, the information retrieval system, hit the market impressively in January and went on to become a great sales success. It's a fast, simple load-and-go method that can be mastered in a half hour and can be used by anyone.

"But the real banger came in October with the introduction of WORK TEN, the new computer language that cuts programming to the bone, produces efficient COBOL and automatically creates its own standard, narrative documentation. We knew it was great. But we had no idea how good it really was until it was offered for sale. Then our projections came apart at the seams. You can imagine what Bart Porter, our VP for Marketing, had to say when his group

that incredible year - 1969.

sold 152% of the 3 month goal in just 45 days. Over 800 inquiries came in that same period and they're still pouring in. You can see why we are actively looking for more top-notch marketing and systems people all over the nation.

OTHER ACTIVITIES

"NCI's software development staff grew in numbers and stature as they continued to operate in an unfettered atmosphere, reaching for the impossible and usually accomplishing it. We don't go for the "cast of thousands" approach working for years on some project. They just bump into each other coming and going, work with endless committees, and fiddle while the user burns. Our approach is refreshingly different. We go ahead and get the job done.

"Our Facilities Management operations expanded as we moved into new and enlarged quarters in Phoenix, and opened a Denver center. These centers are designed to consume a customer's total data processing operation. Including planning, programming, systems work, the computer itself and all his DP personnel. In Phoenix, we do this for a full range of companies including savings and loan, life insurance, mortgage banking and many others. In Denver, we perform all the data processing needs for several banks with more scheduled to go on early this year. This is in addition to a complement of industrial customers.

"We entered the Programming Services Center business in strength and are concentrating on contract programming in the largest markets. WORK TEN, our new computer language, is so successful in producing efficient code, producing it faster, and producing it at a lower cost, that we see an opportunity to have a significant impact on this important market.

"Hardware marketing in 1969 continued strong, although it was not the main thrust of our marketing effort. Several thousand disc packs were sold and we were active in the leasing and sale of a wide variety of computer equipment including the placing of complete computer systems.

WHAT'S AHEAD FOR 1970

"Some dramatic developments are coming from NCI. Including new kinds of hardware designed to attack key thru-put and production problems faced in the machine room. These are ways to get greater efficiency by keeping the concepts of today's high level languages and matching them to firmware.

"NCI will also accelerate the growth of Facilities and Programming Services into new geographical markets, continue to build in existing markets, and add to the best Marketing and Systems Engineering force in the industry.

"New software products are coming. And new combinations of existing products. New ways to make the computer more efficient for management. New ways to save your company money. New ways you can make your department more efficient. All of this and more in 1970.

AND WITH IT ALL, PERSONALIZATION

"We think it must be a personal thing between you and NCI. That's why we have our people talk with you directly in most of our ads. No hocus-pocus or mumbo-jumbo. You see who they are and where they're from. And listen to what they have to say. We believe it's the people who are important. Our people and your people. There is nothing else. That's why I come to you personally with this report.

"Thank you for taking the time to listen and I hope to meet with you personally between now and my next report on what NCI is doing."

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Sun, Surf, Sand...and Systems

DENVILLE, N.J. – Warm Caribbean breezes, swimming and relaxing on white sand beaches, and living in a cabin on a 113-acre island in the West Indies probably doesn't sound much like the atmosphere of the last computer conference you attended.

But Haverly Systems Inc., a developer of linear and mathematical programming techniques, has devised just such a setting for their eight-day advanced seminar for operations research, management science, and computer science managers.

Scheduled for April 18-25 on Petit St. Vincent island in the West Indies, the course has been designed around the premise that a manager's technical skills will achieve maximum value only if he can relate effectively with those in all levels of his company.

Haverly Vice-President George Lowell says that the $775 price includes instruction, course materials, lodging, meals, a cocktail party, and gratuities. Wives may attend as noncontference participants for an additional $100.

Registrations, limited by the 22 available cabins, must be received by Feb. 15.

The company is located at 4 Second Ave.

Information Industry Association Slates Info-Expo '70 for March

WASHINGTON, D.C. – The Information Industry Association (IIA), an organization of commercial firms and consultants involved in the application of advanced mechanisms and techniques for the processing, handling, and dissemination of information, will hold its second annual meeting here March 23-25.

Info-Expo '70, as the program is called, will feature lectures, discussions, and exhibits on the following topics:

- The Information Industry in Perspective: Utility of Information for the Consumer, Chairman for this session is I.E. Block, Auerbach Info, Inc.
- Turning a Corner: Proprietary Rights and the Evolving Information Technologies. The chairman is Gerald Sophar, Institute for Scientific Information.
- Government as a User and Source of Information, chaired by Herbert White, Leasco Systems & Research.
- Roles of the Commercial and Not-for-Profit Segments of the Information Community. Richard Belknap, National Academy of Sciences, will be chairman.
- Information and the Congress, chaired by Walter Kravatz, Legislative Reference Service, Library of Congress.

Featured speaker at Info-Expo '70 will be Emilio Q. Daddario (D-Conn.), a member of the House Committee on Science and Astronautics. As chairman of its subcommittees on science, research, and development and on patents and scientific inventions, he has been concerned with the effective use of new methods and techniques of information dissemination.

Additional information on the meeting is available from IIA Executive Director Paul G. Zurkowski, 1025 15th St., N.W., 20005.

Lecture Series Attracts Prominent Speakers

WASHINGTON, D.C. – Four lectures remain in the Computers, Communications, and the Public Interest series organized by Johns Hopkins University and the Brookings Institution.

The lectures are free and open to the public.

- Property Rights Under the New Technology, Feb. 12. Sen. Quentin N. Burdick of the Senate Subcommittee on Patents, Trademarks, and Copyrights will preside at this session to be addressed by Ralph S. Brown Jr., professor of law, Yale University. Discussants will be Don Lacy, senior vice-president, McGraw-Hill Book Co., and Benjamin Kaplan, professor of law, Harvard University.
- The Regulatory Process, March 12. Yale University President Kingman Brewster Jr. will preside when this session is addressed by Nicholas Johnson, commissioner of the Federal Communications Commission. Discussants will be Lee C. White, former chairman of the Federal Power Commission, and Richard Posner, professor of law, University of Chicago.
- Man and Machine: Prospects for the Human Enterprise, April 9. James Fisk, president of Bell Telephone Laboratories, will chair this session addressed by George Wald, Nobel prize-winning professor of biology at Harvard. Discussants will be Daniel Bell, chairman of the Commission on the Year 2000, and Harvey Brooks, chairman of the National Academy of Sciences Committee on Science and Public Policy.
- Computers in the Decision-Making Process, May 14. Deputy Secretary of Defense David Packard will preside as Anthony Oettinger, chairman of the National Academy of Sciences Computer Science and Engineering Board, addresses the session. Discussants will be Alain C. Enthoven, vice-president, Lition Industries, and Ithiel de Sola Pool, professor of political science, MIT.

All lectures will be held in the auditorium of the Johns Hopkins School of Advanced International Studies, 1740 Massachusetts Ave., N.W.

Cruzen Named Director Of Exhibits for Afips

MONTVALE, N.J. – Donald R. Cruzen has been appointed director of exhibits for the American Federation of Information Processing Societies (Afips.)

According to Afips Executive Director Dr. Bruce Gilchrist, "Mr. Cruzen will report to H.G. Asmus, who assumes the position of director of conference support, in addition to his current duties as executive secretary of the federation."

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Time-shared input cuts data preparation costs 50%.

Now you can cut your computer input costs in half. This new innovation in data preparation techniques gives you two money-saving advantages over conventional keypunch or one-key-board/one-magnetic-tape-per-operator systems: (1) the LC-720 employs a computer time-shared input; (2) it is the only system available that provides data output directly on IBM/360-compatible magnetic disc.

By time-sharing the data from 60 or more keyboard operators simultaneously, significant savings in data station costs of as much as 50% can be achieved. Costs drop to as low as $4300 per data station for a typical 60 station system. For large data preparation installations, the time-shared input is the only economical way to go.

Data entered into the LC-720 is processed by a small digital computer and stored on an IBM/360-compatible magnetic disc that provides the advantages of bulk storage and high speed random access of data. The problems associated with punched card handling or the mounting, pooling, merging and unmounting of magnetic tape reels are eliminated. All data is conveniently and economically stored in an IBM 1316 disc pack for direct high speed input to your modern data processing system. Naturally, an IBM/360-compatible magnetic tape is also provided with the system as standard equipment.

The LC-720 KeyDisc System also offers for the first time, data verification requiring one input pass only through the system, in addition to the normal technique of verification requiring two different operators. Record size is infinitely variable by each operator from 1 to 120 characters long and the system stores a large library of 30 or more different format control programs, all available simultaneously to any and all operators.

LC-720 KeyDisc System

Bring your own data for a demonstration

Logic Corporation invites you to see an operating demonstration of the LC-720 KeyDisc System at the company's premises. Bring your own original data and Logic will provide a reel of magnetic tape of the output of your data from the LC-720 for later printout at your own computer facility.

To arrange for a demonstration, contact Gary Tischler, Director of Marketing (201) 334-3713

LOGIC CORPORATION

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Elementary School Formulating Data Bank With Minicomputer

By Kate Rachstein
CW Education Editor

ELK GROVE VILLAGE, Ill. — The Juliette Low Elementary School has installed a general-purpose digital minicomputer to process a data bank on the school's 350 kindergarten through fifth-grade students.

As conceived by school principal R. Earl Woodley and testing and research director Dr. Anne Kennard, the first part of the system's two-phase project is an Educational Information System (EIS) in which some 120 personal, socioeconomic, and learning characteristics about each child will be entered into memory.

'A Little Bit Touchy'

The information will be gleaned from test scores, school records, and questionnaires sent to parents.

"It's going to be a little bit touchy on the personal data," Woodley said. Although parents may decline to answer any questions on the standard form, he commented, "What they leave blank, we will get."

He explained that if a student comes to school crying, and the teacher is able to relate well to the child, then it isn't too difficult to determine "if daddy has lost his job or if mommy and daddy are fighting."

This kind of information could then be included in a weekly update of the files, Woodley said. Parents, he noted, would not have access to the contents of the file, and would thus be unable to object to the inclusion of such items.

Quick Learning Profile

"With an up-to-the-minute data bank, a teacher can review the child's learning history as well as extracurricular factors such as position of birth order of siblings and other pertinent influences," he explained.

"Thus, if a student falters in any given subject, the teacher can secure from the computer within a minute or two, a profile of all the factors affecting the particular student's learning capacities to tailor a teaching plan to present that student the next day," Woodley said.

Precautionary Measures

An in-service program to instruct teachers in the proper use of the system is being offered, he said, and not all of the material is available even to them.

Woodley was adamant that no one from outside the school would be able to obtain the data.

Each teacher has an identification code for sign on and sign off, and the printouts and other pertinent materials are stored in a locked room.

Most testing is done on a yearly basis, he added, so that old, perhaps erroneous, data of this sort would't be regarded as current.

Systems Software

The programs to implement the EIS on the Varian 620/i are written in Fortran IV and designed to handle a series of requests made at teletypewriter terminals. The system is outfitted with additional disk pack storage so that the total of 42,000 facts about the student body can be accommodated.

Research personnel also have at their disposal a LIST command to provide student rankings by a specific variable for a given grade level, with a summary of the values of the variable, such as mean and standard deviation.

Individualized Instruction

In the second phase of the project, the accumulated information will provide guidelines for the detailed structure of a Computer Assisted Learning (CAL) project scheduled to begin this year.

Each student will engage in dialogs with the 620/i, monitored by a 520/i equipped with eight keyboard terminals and CRTs. Among the curricula under consideration for the program are vocabulary building, reading, and mathematics concepts and drill.

Woodley and Kennard cited motivation for learning, individualized instruction, guided instructional decision-making, and creative dialog as major advantages of the CAL project.

Julietta Low Principal R. Earl Woodley types in data requests while Dr. Anne Kennard, testing and research director, explains the operation of the Varian 620/I minicomputer data bank to a group of students.

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The TOTALTRAN disassembler has been developed for both 1400 series and 7070 series programs, and is the most efficient and complete disassembler package in the industry.

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Calendar

Jan. 26, Boston – Seminars on IBM/360 System, DOS Automatic Computer Utilization System, presented by Webster Computer Corp. Also on Feb. 2, Washington, D.C. Contact: Webster Computer Corp., 1 Padanaram Road, Danbury, Conn.

Jan. 26-28, Silver Spring, Md. – The Institute for Advanced Technology; Control Data Corp. presents a three-day seminar on optical character recognition. Also on Feb. 23-25, New York, and on March 23-25, Washington, D.C. Contact: Registrar, The Institute for Advanced Technology, Control Data Corp., 5272 River Road, Washington, D.C. 20016.

Jan. 29-30, San Francisco – A seminar on the development and application of computerized personnel data systems. Also on Feb. 4-5, New York, and Feb. 18-19, Tampa, Fla. Contact: Mr. Chris Marra, Information Science Inc., New City, Rockland County, N.Y.

Feb. 11, Chicago – The afternoon session of the AMA Personnel Conference will include a presentation of Computer Applications in Personnel. Contact: John McClane, AMA, American Management Association Bldg., 135 W. 50th St., New York, N.Y. 10020.

Systems Use in the Laboratory Subject of Purdue Summer Course

WEST LAFAYETTE, Ind. – A grant of $30,550 has been awarded to Purdue University by the National Science Foundation (NSF) for presentation of a short course entitled Digital Computers in Chemical Instrumentation.

The award, one of 27 totalling $577,690, was made as part of a program to acquaint college, junior college, and technical institute teachers with the latest advances in their fields.

Scheduled for June 7-26, the course is aimed at academic and industrial scientists in chemistry and related fields, including biology, clinical chemistry, and medicine. It is said to require no previous experience with digital instrumentation or computer programming.

The course is designed to provide a sound introduction to the use of the small digital computer in the laboratory. Three weeks of intensive lectures will deal with the elements of digital logic, digital data acquisition techniques, and the use of the on-line digital computer in chemical instrumentation.

Facilities for use by participants include stations for experimentation with digital logic circuitry and general-purpose laboratory-size digital computers. The logic stations are patchboard training labs at which progressively complex logic circuitry can be constructed and tested.

Participants will utilize the systems to develop machine-language programming skills, as well as to examine the input/output capabilities for interfacing and for control of experiments. They will be encouraged to develop a sequence of progressively more involved computer manipulations.

Limited Enrollment

The NSF grant will cover the tuition and laboratory fees of $625 and a stipend of $15 per day for 24 instructors. Twelve nonacademic participants will also be selected, but their expenses will not be covered.

Also presented in 1968 and 1969, the course staff consists of Purdue professors S.P. Perone and H.L. Pardue.

The cut-off date for applications is March 15. Technical inquiries may be sent to Dr. S.P. Perone, Chemistry Department, Purdue University, Lafayette, Ind. 47907. Application forms and general information are available from the Division of Conferences and Continuation Services, Purdue University, Memorial Center.

If your office isn't exactly surrounded by good keyboard operators, we can train as many as you need.

We specialize in increasing the productivity and accuracy of computer input equipment operators—experienced employees as well as new operators.

For example, when the Book-of-the-Month Club moved its offices to Camp Hill, Pa., they discovered there weren't enough key punch operators available. So they called us in. And we trained the operators they needed from scratch. In just three weeks.

We increase the productivity and accuracy of existing operators, too. We do it by reducing operator errors by 50% to 80%. And by increasing speed from 15% to 40%, with corresponding expense savings.

Computerworld concluded, in an independent study, that the average increase in operator productivity is 22%.

So it's no wonder that top Fortune companies like AT&T, and Mobil Oil use our services. So do 4 of the top 5 banks listed by Fortune. And 8 of the 10 leading insurance companies.

We train for whatever type of keyboard-operated equipment you have. Keypunch, magnetic tape, typewriting, CRT, calculating, etc.

How we do it.

KTI has the specialized talent, techniques, and materials. Also, our training is "operator oriented" instead of "machine oriented."

Where we do it.

KTI is unique. We do not operate schools or conduct classes in the usual sense. We work only with employers.

KTI trains on-the-job or off-the-job. Our professional instructor will work with your operators on your own equipment and primarily on your own documents.

What it costs.

The amount varies. But savings in the first year usually exceed five times the investment. So the service pays for itself in 9-13 weeks.

Free consultation or appraisal.

For a free consultation about KTI, or a brief appraisal of your present operators, write or call us. Then, you can have as many great keyboard operators as you need. No matter where you're located.

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FLASH...ON SITE DOS OPERATOR TRAINING PROGRAM NOW AVAILABLE.

Education Briefs

Many Menus, No Minis Delivered at Christmas

DALLAS – Holiday customers at Neiman-Marcus' downtown store here and in Houston were clearly "just looking" at the H-316 Kitchen Computer offered in conjunction with Honeywell.

Although no sales were recorded for the $10,600 item, some 5,000 shoppers stopped by to look and obtain a computer-generated complete menu from a list of 21 entrees. (Beef and chicken were clear favorites, drawing about 75% of the inquiries.)

A Honeywell representative at the display locations solicited visitors' opinions about the unusual appliance, and determined that all 5,000 shoppers accepted the kitchen computer concept as a sign of the times. Some 200 shoppers questioned thought that the computer-run home would become a reality within five to 20 years.

Natts Accreditation to ECPI

NEW YORK – The New York City branch of the Electronic Computer Programming Institute (ECPI), a national network of data processing schools, has received accreditation from the National Association of Trade and Technical Schools (Natts).

The association is a federally recognized organization that sets standards, investigates, and accredits private vocational institutions.

Evaluations cover the school's educational objectives, courses and curricula, faculty, student services, student success and achievement, admission policies and practices, tuition policies, student recruitment, physical facilities, management, and self-improvement program.

the Mark I converter reduces computer workload

Normally, conversions are done on a computer.

punched cards are transcribed onto tape, or

small reels of computer tape are pooled onto a single reel.

The Result: heavy computer workload for routine conversion.

Cybercom offers something different—the Mark I key-to-tape encoder and converter system.

The Mark I key encoder records data directly onto quarter-inch digital tape cartridges, then pools the data "off-line" onto computer tape at a converter station. The computer sees only complete reels of data ready for processing. Total preparation of input work is done in the input room.

The Mark I eliminates the computer input bind caused when many small reels of computer tape are converted to a single reel.

Tape loading is faster and more convenient; remote processing capability is increased because the cartridges may be transported easily.

Most important of all, the Mark I system frees your computer for profitable work.

Write for a brochure today.

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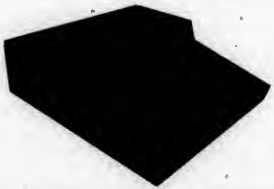

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Advertising Agency Speeds Up Spot Television Buying

DETROIT, Mich. – The random access capabilities of a GE computer are being utilized here by an advertising agency to speed up the process of spot television buying.

Previously, Ross Roy media buyers would request TV station representatives to furnish available spots based on client needs and budget limitations. This was time consuming since it often involved as many as 25 or more markets, with several stations within each market.

Station representatives then had to qualify available spots with current ratings from Neilsen, or American Research Bureau (ARB). Ross Roy further evaluated the information in making the final buying decision.

This procedure could take several days.

The new computerized system was developed by Kai Friis, an internal consultant. It utilizes all ratings and other demographic information on television markets available from ARB. This data is stored in the GE-115 disk oriented system.

TV programs are coded and a printout furnished to each station. Upon request, available spots and current prices are sent or called in to the agency where they are fed into the computer.

Printouts of available spots, costs, and specific demographic data are analyzed by media buyers to establish best buys. An expanded system employing linear programming will allow the GE-115 computer to further "optimize" the buy for clients.

Joseph V. Karle, vice-president of media, feels that advertising agencies should do all they can to influence ARB and Neilsen to establish a standardized set of program codes for the industry.

Checking a computer printout with Kai Friis, center, who developed the system for Ross Roy, are Joseph V. Carle, left, vice-president of media, and Ronald Post, associate media director.

This would have two advantages. One, it would reduce lead time by minimizing the paperwork flow between stations and the agency.

Second, it would eliminate the possibility of several agencies establishing their own control numbers requiring, conceivably, a virtual library of code numbering systems by broadcasters.

British Develop Plan to Improve Pilot Visibility

LEICESTER, England – A small computer-based system to replace the slower and less accurate manual and instrument-assisted methods of determining pilot visibility at airports has been developed by GEC-AEI (Electronics), Ltd., here.

The system, called Instrumented Visual Range (IVR) is scheduled for installation shortly at five United Kingdom airports – London's Heathrow and Gatwick and those in Liverpool, Manchester, and Glasgow, Scotland.

IVR was developed for the National Air Traffic Control Services organization on recommendations by a group from the International Civil Aeronautics Organization and the Fifth Air Navigation Conference. It uses photoelectric measurements of atmospheric transmittance at intervals along an airport runway.

Transmittance is measured by a device called a transmissometer, which is controlled by a Digital Equipment Corp. PDP-8/L computer. Also included in the system is a device for measuring background luminance and a data link to send the visibility information to the airport control tower.

The transmissometer contains a transmitter and receiver at one end of a base line with a tetrahedral mirror at the other. Reference values are established by passing the light directly from the transmitter to the receiver. With this done the visibility is measured, and the information digitized and passed over telephone lines to the airport control tower.

In the tower, a display shows runway direction, visibility at the runway threshold, at its midpoint and at the stop end. It also is possible to show visibility trends, and additional displays can be added.

The PDP-8/L calculates the runway visual range, assures calibration and integrity checking, and controls the logging and formatting of data.

The system manufacturer said that a device like IVR is a necessity if traffic is to increase at airports, as well as being a factor in any density of traffic.

It said that obtaining visual range manually is slow, not very accurate, and not well suited for logging or processing. Instruments, while exempt from human error, require extensive knowledge of mathematics to operate and a knowledge of background light level and runway lamp brightness, factors automatically allowed for by the human observer.

'Cowboy' Helps Airline Improve Passenger Reservation System

NASHUA, N.H. – Braniff International has unveiled a passenger reservation computer system with visual display CRT terminals in all locations.

The more than $12 million system, nicknamed "Cowboy," uses dual IBM computers and includes a network of approximately 250 CRTs manufactured by Sanders Associates, Inc.

The Braniff computers, located in the company's new 100,000 sq ft computer center in Dallas, are linked to the CRT units via two Sandac 200 communications processors.

The displays are installed in city ticket offices, airport ticket offices and in six of the airlines' major reservation offices.

The Cowboy system will be expanded to include the Hawaiian Islands via satellite communications in the first quarter of 1970.

A LITTLE BIT EXTRA

...FROM MAGNAFILE.

The Model 8502, Magnafile's low-cost memory system, offers you memory storage from 1.25 million to 5 million bits.

Like its big brother, the Magnafile Model 9330, this head-per-track system features proprietary nickel-cobalt plating, conservative data densities, and state-of-the-art recovery techniques to provide a highly stable data base.

If you've been looking for a reliable, low-cost memory system without success, your search is over. Magnafile has it for you in the 8502 ... and you get a little bit extra in the bargain!

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Honeywell Will Open New Information Sciences Center

By Edward J. Bride
CW Staff Writer

CAMBRIDGE, Mass. – The search for more applications of computers is being taken up by Honeywell, which opens a new Information Sciences Center here on February 1.

Dr. Ugo O. Gagliardi, a researcher and educator in the computer field since 1954, will head the center, to be located at 575 Technology Square.

Gagliardi, a Fulbright Scholar in 1955-56, said that software development and organization would be a major concern of the center.

In an exclusive CW interview, Gagliardi called for better software design as a general solution to user problems; he cited file management as one significant problem.

Other troublesome areas include the complexity of choosing between a growing number of alternatives for a prospective first-time user: lease, buy, timeshare, etc.

Competent analysis of situations and needs will continue to grow in importance as the industry expands, he said.

Gagliardi also cited evaluation of present and proposed operating systems as one of the center's objectives. He said that understanding the dynamics of modern operating systems would be a long-term project.

Examining current tools and developing new ones to model and measure operating systems will also be a function of the center.

Gagliardi summarizes recent important developments as mainly "increased understanding." He does not see the evolution of the third generation as the event of the sixties, but rather cites increased effort to improving I/O, evolution of multiaccess machines without greatly increasing memory costs, and developments in program storage and protection as significant accomplishments.

"Maturing" for Seventies

Nor does he see the advent of the fourth generation as the event of the seventies – if indeed it comes in this decade at all.

Rather, he looks to the "progressive clarification and maturing of our viewpoints."

He says such maturing will come through progress on a broad front, not from singular accomplishments. He cites for goals in the seventies: better organization of operating systems; organization of hardware systems; languages for software development, and programming tools to aid system productivity.

His initially small staff will be augmented from within the company and the computer industry, as needs arise.

Aside from attempting to solve user problems on a general basis, Honeywell says the center will conduct basic research in advanced computer systems.

Before going to Honeywell this year, Gagliardi was most recently a vice-president of engineering and technical director of Interactive Sciences Corp., where he directed extensions in the file-handling, telecommunications, security, and management areas of a modern, multiuser operating system.

IBM Locates New General Systems Div. in Atlanta

ATLANTA – IBM will locate its new General Systems Division here. The division is responsible for developing and manufacturing low-cost data processing equipment.

C.B. Rogers Jr., president of the division, told a news conference here that Atlanta was selected because of its advantages as a business, cultural, and educational center.

He said the headquarters staff initially will be about 150 persons and will be located in leased office space for the foreseeable future. The division's operations will be shifted from its temporary headquarters in White Plains, N.Y., to Atlanta sometime this spring, Rogers added.

General Systems Division is part of IBM's Data Processing Group, whose six divisions have overall responsibility for the development, manufacture, programming, marketing, and servicing of data processing products. The other division headquarters are in White Plains, N.Y.

The division's laboratories and manufacturing facilities are in Rochester, Minn., and Boca Raton, Fla. About 5,000 people are employed at these two IBM locations.

When the General Systems Division was announced in November, IBM said it was establishing the new division to decentralize decision-making and to place a special focus on the low end of the product spectrum.

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1440
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Contracts

A $1 million contract has been awarded to Control Data Corp., Minneapolis, by the U.S. Navy to install seven CDC data collection systems at Naval air rework facilities throughout the country. The systems provide management at each of the air stations with job status information, maintenance control, personnel control, and information on machinery utilization.

Continental Airlines has purchased a computer-controlled data input system from Computer Machinery Corp. of Los Angeles. The keyprocessing system is designed to increase the company's speed of processing large volumes of information by 25%.

A $12,500 contract has been awarded to Computer Congeneries Corp., Oklahoma city, by the Army and Air Force Exchange Service to conduct a six-week class for college graduates who are programmer trainees in the AAFES Systems Division. The course is being conducted in Dallas, and includes Intro/360, Cobol, IDS, and DASD concepts

Ampex Corp. has received a $600,000 contract from Western Electric Co. to supply modified Model TM-7 digital tape drives for use in two Bell System programs. The drives will be used to feed program-updating information to the stored program controller serving the traffic service position system and electronic translator system.

Princeton Time Sharing Services, Inc., Princeton, N.J., has been contracted by the New Jersey Education Association to supply all their data processing needs. Major applications include registration membership accounting, publication circulation control, and master file maintenance.

Aspen Systems Corp. of Pittsburgh, Pa., has signed an initial $435,000 contract with the state of Michigan to prepare a compilation of the state laws current through 1970, completely integrating the Michigan Compiled Laws of 1948 and all subsequent session laws.

Univac has received a contract to supply a $16.7 million Univac 1108 multiprocessing system to the data center of the U.S. Army Test and Evaluation Command at White Sands Missile Range, N.M. Five Univac 1108 and seven Univac 418-11 computers will be used in the Test Evaluation Analysis and Management Uniformity Plan program, primarily to support technological advances in missile development and instrumentation.

Seamount Corp., New York, has retained Computer Real Time Systems, Inc., Newport Beach, Calif., to determine the extent to which computers can be used in the management of ships as general agents. The consulting firm will evaluate automation of all information flow pertaining to vessel operations, particularly control of containerized cargo throughout the world.

A three-year data processing contract from the Atlanta, Ga., Automobile Club has been received by Association Processing Corp., a subsidiary of Delta Data Systems, College Park, Md. The proprietary software system will provide total membership accounting and subscription fulfillment services, as well as reports on sales analysis, accounts receivable, billing registers, and emergency road services.

Raytheon Co. has been awarded a $3.8 million contract by Quantas Airways, Ltd. for the remote terminal equipment portion of the Australian airline's new automated reservations and departure control system. Under the contract, Raytheon will supply more than 400 Dids-400 digital information display systems, which will display, on television-like screens, the latest reservation information for any Quantas flight.

Hazeltine Corp., of Little Neck, N.Y., has received a contract from the Department of Defense for the development of electronic warfare equipment. When finalized, it is anticipated that the contract will approximate $112,500.

The Westinghouse Electric Corp., Pittsburgh, Pa., has been awarded a $488,264 contract by the Department of Transportation to design an information network aimed at improving state and national highway safety programs. The system will be designed to enable individual states to autonomously compile and exchange information necessary to operate and manage their own highway safety programs.

Computer Operations, Inc., a Beltsville, Md.-based computer systems manufacturer, has completed the design and installation of a computer-automated electrical-power-consumption monitoring system. The system continuously monitors various power measuring transducers throughout the plant and computes the actual power consumption in the Massena, N.Y., plant of Aluminum Corp. of America.

A Nasa contract has been awarded to Ampex Corp. by the Langley Research Center to develop a monolithic ferrite memory array that is to be smaller, more reliable, and require less drive that present arrays. Under the contract Ampex will deliver a prototype product to Nasa early in 1970.

Roux Laboratories, Inc., which is moving to Jacksonville, Fla., from New York, has chosen Data Processing, Inc. of Jacksonville to handle the computerized accounting for their nationwide operation.

A $3.6 million follow-on contract has been awarded to Cubic Corp., San Diego, Calif., by Eastman Kodak Co. for the continued production of an undisclosed quantity of Kodak Kom-90 microfilmers. The microfilmer converts digital computer output to readable form and records the information on microfilm and is designed for use in business organizations for the distribution or retrieval of computer printout.

Over the next 15 months, up to $1 million worth of computer memory disk drive systems, manufactured by Computer Memory Devices, Inc., Glendale, Ariz., will be purchased by Comtel Corp. of Southfield, Mich. Comtel plans to supply the disks with the proper electronic interface to work with several different small, high-speed computers to greatly expand the applications of the computers.

Tempo's Communications Concentrator takes over all the tedious traffic tasks so your central processor can spend its time on more important things. Tempo will provide the front-end interface to your larger computer in addition to interfacing with full duplexed synchronous or asynchronous lines. The concentrator interfaces with up to 48 full duplexed asynchronous lines with any mix of 12 line speeds from 75-4.8 kilobaud. A synchronous modem controller is available for speeds up to 9.6 kilobaud. The asynchronous lines are expandable in groups of eight, which means you can tailor a program to current needs with plenty of room for growth. Since line parameters are dynamically software selectable and different speed devices may use the same line, expansion requires no hardware modification other than possibly data sets.

Other features include: Byte size, and stop bit software selectable, full or half duplex operation, automatic answering, program interrupt at EOM, RS 232B compatible and a sampling method and priority structure that keeps all lines operating at highest rates without degradation of system performance or data reliability.

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Announcing the MRD-200—a new, low-cost way to display alphanumeric data using TV monitors.

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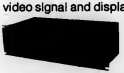
The MRD-200 accepts ASCII data, stores it in its own memory, converts it to a composite video signal and displays it on any 525-line TV monitor. In from 32 to 1024 character positions in 1, 2, 4, 8, or 16 lines with either 32 or 64 characters per line. Data may be displayed on any number of monitors at any number of locations with just a single coaxial cable.



Cost for an MRD-200, not including monitors, starts at $1250.

Control features let you advance to any line or character position, blink any character or combination of characters on and off, use a cursor symbol for tracking the location of the next character, and erase all or part of the screen.

The MRD is also available in other configurations. The MRD-500, for example, can read as well as write, and has random access capability. Thus, it's ideal for custom-designed display systems.

So if you have an alphanumeric display problem in process control, test equipment, data acquisition, computer consoles or data transcriber displays, you no longer have to go to extremes.

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Acquisitions

URS Systems Corp., San Mateo, Calif., has reached an agreement in principle to acquire **The Matrix Corp.**, which operates computer centers in the Los Angeles and Boston areas. The purchase price will be $1,200,000 in URS stock. URS provides professional services in the data sciences; in engineering, architecture, and planning; in socio-economic research; and in market and regional development.

Washington Engineering Services Co., Inc., Kensington, Md., has reached an agreement in principle for the acquisition of the batch computer operations of **Telecomputations, Inc.** Wesco offers systems analysis, programming, and ADP services.

Datāram Corp., Princeton, N.J., manufacturer of computer memory products and memory test equipment, has signed an agreement for option to purchase the major interest in **Alphameric Data Corp.** of Boston for an undisclosed amount of cash and stock. Alphameric Data is the designer of an I/O computer terminal for use with time-sharing computer systems and with small free-standing computers.

Consolidated Analysis Center Inc., Santa Monica, Calif., a company engaged in the application of advanced computer analysis and software techniques for government and industry, has entered into a written agreement to acquire, for an undisclosed amount of C.A.C.I. stock, all of the outstanding stock of **Resource Computer Corp.** of Los Angeles. RCC is an executive search consulting firm, concentrating on the computer industry, with interests in education and general management consulting.

Dearborn Computer & Marine Corp., Chicago, has acquired exclusive franchise rights from **Advanced Systems, Inc.** in Chicago to operate video-assisted computer programming schools in Canada and the greater Chicago metropolitan area, and to market the video instruction technique to companies for use in their in-house training programs. Dearborn is involved in computer leasing, offshore oil drilling, marine services, and Indonesian oil and gas exploration. Advanced Systems features video assisted instruction designed for both beginners and sophisticated programmers.

Flexible Circuits Inc., Warrington, Pa., has reached an agreement in principle with **Riker-Maxson Co.**, New York, for the acquisition of its wholly owned subsidiary, **Hopkins Engineering Co.**, San Fernando, Calif. Flexible Circuits manufactures flexible electronic circuitry for computers, instruments, and other electronic equipment. Hopkins manufactures a broad line of electronic filters and other devices used in the same fields.

Essex Systems, Inc., New York, has entered into an agreement to purchase **Blue Ribbon Label Corp.**, Hackensack, N.J., manufacturer of continuous computer pressure sensitive labels. The purchase will be for cash. Specific terms of the transaction were not disclosed. Blue Ribbon is a manufacturer of pressure sensitive labels for computer applications.

Vernitron Corp. has agreed to acquire **Trygon Electronics, Inc.**, with plants in Roosevelt and Woodside, N.Y., and in Munich, Germany. Vernitron will exchange a minimum of 59,000 and a maximum of 84,000 of its common shares for ownership of Trygon, contingent upon future earnings. Vernitron is engaged in computer and control system components, medical equipment, data processing products, and transportation. Trygon produces electronic power supplies and digital voltmeters.

IDC Europa Serves Overseas Markets

IDC Europa Ltd., a subsidiary of International Data Corp., has been formed in London to provide international market data on computer products and services.

The new subsidiary will maintain extensive files on computer and data processing installations in Europe from which it will provide detailed market studies to its clients. Other services will include educational seminars for financial analysts.

The first activity of the firm is the publication of a newsletter, *EDP Europa Report*, which provides in-depth analysis of important events in data processing worldwide. To be published 24 times a year, the newsletter is aimed at corporate executives and market and financial analysts in all phases of data processing.

★ Paragon National Corp., a New York-based nationwide vehicle leasing and automotive service company, has formed Paragon Computer Services, Inc. to provide computer services to the parent company and outside customers.

NEW SUBSIDIARIES

The company is presently developing systems and programs to provide management information for all of Paragon National's subsidiaries.

In addition, an information bank on the pricing of vehicles through a time-sharing system is planned. This will enable Paragon National offices around the country to get instant leasing prices and plans, via phone, to be relayed on the spot to prospective customers.

★ Intech, Inc. of Minneapolis, has formed an Australian subsidiary, Intech Australia Ltd.

The new company is located in Melbourne.

Intech was formed in Minneapolis in 1967 to provide computer software, systems design, and facilities management services to computer users and manufacturers.

★ UCC International, Inc., a Delaware corporation headquartered in Dallas, has organized a new subsidiary, University Computing Canada, Ltd., headquartered in Toronto.

UCC International, Inc. operates computer service centers in nine countries. The UCC International announcement reported that University Computing Canada, Ltd. was formed to offer computer utility and software services in Canada.

Canada's Largest Computer Is Delivered

OTTAWA – Canada's largest computer, an IBM 360/85 costing almost $12 million, has been delivered to Systems Dimensions Ltd.

The Model 85 is being installed in SDL's Ottawa system centre, a $2-1/2 million building specially designed to house the giant machine and its peripheral equipment. Direct access to the computer is provided through terminals in Toronto and Montreal.

The cost of SDL's configuration is made up of 25% central processing unit, 25% core storage, and 50% peripherals such as tape drives, drum and disk storage units, and printers.

The Model 85's CPU is twice as fast as that of any other computer in Canada, its high-speed memory is twice as large as that of any other computer in Canada and its unusually complete range of peripherals gives more versatility than in any other configuration in Canada, according to SDL.

Ninety per cent of all jobs will take less than one minute to complete, and the computer will be able to handle up to about 1,000 jobs per day, SDL claims.

Because of the computer's speed and capacity, new techniques have had to be developed to measure the amount of computer power used on any one job. SDL has developed special hardware and software to make the most precise possible measurement of computer usage.

Because of its incredible speed and its depreciation rate of about $100,000 a month, an elaborate production control system has been devised to ensure maximum productivity and to protect against human error.

The computer scans the jobs waiting in line and organizes them in the most efficient order for processing. It then sends instructions to operators to assemble the disks, tapes, files, and other materials required for processing to begin.

Town Payroll Computerized

DIXON, Ohio – Dixon city employees are receiving computerized checks.

The new service was adopted to speed up check writing for 400 to 500 city employees. Balancing of the payroll will also be done by computer, saving two weeks of hand figuring.

Cybercom Mark I Installed

At the first installation of the Cybercom Mark I key encoder, George Dill (center) vice-president, marketing, for Cybercom Corp. points out the features on the production model of the cassette kayboard-to-tape encoder to Gloria Christensen and Ed Burfine, president of Applied Cybernetics. Cybernetics, Sunnyvale, Calif., purchased 12 of the encoders which will soon be part of the professionals service firm's complex.

YOUR 360 NEEDS A FRIEND

THE NEW ASTRODATA ELECTRONIC DATA SORTER

Your System 360 is probably operating at low efficiency because it's spending up to 60% of its time sorting data. No more! Astrodata's new 1561 Data Sorter will store, sort, and return sorted records to the computer at high rates, giving the 360 CPU that much more time for real computing.

Plus: The 1561 frees core formerly assigned to sorting functions, permitting more work, greater throughput.

Plus: The 1561 produces string lengths 20 to 200 times longer than present methods, meaning fewer merge passes, less CPU time and less I/O time for each sort.

Plus: The advantage of the 1561 increases with key-length for it sorts over long keys as quickly as short.

Plus: The 1561 holds 65,536 records at a time, a total string length of 2.6 million bytes. That's real capacity.

Plus: It's plug-to-plug compatible with all 360s running under OS, and is delivered with "bundled" software that fits directly into OS Sort.

And: Wonder of wonders, the 1561 actually documents its own justification. Part of the software is the Astrodata Sort Usage Monitor – ASUM – that records the amount of sort time utilized, the increased efficiency of the 360, and the relative savings in $.

NEW BROCHURE

There's a new brochure available on the 1561 Data Sorter – a copy will be forwarded on request. If you need immediate information, please call (714) 772-1000 and ask for Sorter Sales.

ASTRODATA

ASTRODATA INC., 240 E. Palais Rd., Anaheim, Calif. 92803; (714) 772-1000

Computers Unlimited Opens First Center

ROCHESTER, N.Y. – Computer Unlimited, Inc. has opened its first computer center here, offering time-sharing, batch processing, and programming services to EDP users in upstate New York. The company will serve clients in Buffalo, Rochester, Syracuse, Utica, and adjacent communities.

The new center is equipped with an IBM 360/67.

EXPANSIONS

The CUI installation handles on-premise batch processing, as well as time-sharing and remote job entry operations originating via telephone hookup to terminals in distant user offices.

Up to 176 users can simultaneously be on-line to the CUI computer.

CUI markets Vatton's System 21 terminals and the firm's new, small, general-purpose computers.

CUI is also sales representative for Miracl/CPG, a new Cobol programming system developed by Republic Software Products, Inc. of E. Orange, N.J.

Quantum Science Opens New Computer Tech. Center

HARTSDALE, N.Y. – The Computer Technology Division of Quantum Science Corp., a technological information service company specializing in electronics and the computer industries, has opened its new headquarters here at 250 E. Hartsdale Ave.

The Computer Technology Division conducts special and multiclient studies, forecasting marketing and technological trends in the computer hardware, software, and services areas.

Quantum Science Corp. is headquartered at 245 Park Ave., New York, and, in addition to the Hartsdale location, has an office in Palo Alto, Calif.

The company provides integrated information services in either standard or specially tailored formats for market research, corporate planning, and management decision-making requirements in technological markets.

Other Expansions

Cullinane Corp., a Boston producer of computer software packages and services, has announced plans to move into The Boston Company Building in Boston next August.

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Orders and Installations

A Burroughs B6500 valued at more than $3.8 million has been ordered by Dynamic Computers/Systems of Jersey City, N.J. The multiprocessing system will service many clients on a remote access basis through the use of on-line communications terminals. Applications already programmed for clients include the areas of economics, market research, distribution, accounting, and engineering.

Three Honolulu data processing organizations will soon apply NCR Century computers to their diverse data requirements. The Stanwick Corp.'s Hawaii office will use a Century 100 to provide business-oriented EDP services to its clients. Digital Systems Services will use a Century 200 for on-line hotel processing, and Advanced Data Techniques, Inc. will use a Century 200 for inventory control, accounts payable, and other applications.

Multiple Access General Computer Corp. of Don Mills, Ontario, has reached an agreement with Computer Terminal Corp. of San Antonio, Texas, under which GCC will receive up to 500 Computer Terminal Corp.'s Datapoint 3300 terminals. GCC expects to install most of the terminals it has ordered in customers' offices where they will be used with the company's large-scale computer system through its remote computing service.

Decitron Communication Systems, Inc., manufacturers of data processing and electronic equipment, will install its data collection system in the East Meadow branch of the Nassau County, New York library systems. The system will be utilized for book control, past due collections, and book card borrowing.

Instrument Systems Corp. of Huntington, N.Y., has installed a Honeywell computer system and three Honeywell keytape data prepáration units for a variety of reporting applications. The system is now being used for basic corporate financial and manufacturing reporting systems, which are designed for individual subsidiary operations. Future plans include establishing a nationwide data processing system linking all subsidiaries with the parent company through a communications network.

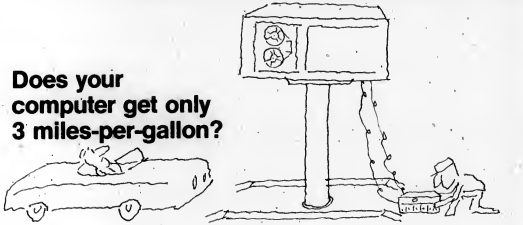
Computer Applications Associates, Inc., Houston, has installed a small time-sharing system, the TSS-8, from Digital Equipment Corp., Maynard, Mass. CAA offers packages customized for users primarily in the petroleum field, to determine characteristics of areas under exploration for oil. Subscribers will use the system to analyze data from preliminary exploration surveys before deciding whether to begin detailed seismographic surveying.

Computer Response Corp., Washington, D.C., is in the process of installing a large-scale IBM 360/67 that they will share with Perkin-Elmer Corp. of Norwalk, Conn. under a $1.5 million, three-year contract. Perkin-Elmer Corp. will pay Computer Response Corp. a minimum of $516,000 a year for its share of the machine, and CRC will market the remainder of the system.

A miniature, low-cost computer, weighing less than eight pounds, has been delivered to the U.S. Air Force Avionics Laboratory by the Defense Systems Division of the Bunker-Ramo Corp., Canoga Park, Calif. The computer will be used primarily in advanced air-to-surface missiles and other applications requiring small size and high performance.

Her Majesty's Stationery Office has recently ordered an ICL 1904A from International Computers Ltd., London. The equipment ordered includes an optical mark reader and will be used primarily to calculate pay and maintain staff records for nonindustrial civilian staff within the Ministry of Defense.

Worcester Polytechnic Institute has installed an RCA Spectra 70/46 time-sharing system that will be shared by 10 area schools. The new computer, valued at over $2 million, will be used for a variety of time-sharing and remote computing applications, including student computer programming, education, research and development, and administrative data processing.



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The Series 7700 comes in a variety of configurations and sells from $4960. It can monitor up to 18 different computer functions simultaneously and do it without costing you any machine time.

Its output will tell you specifically what your utilization factors are. How efficiently you are using I/O. How much time goes for supervisory functions. Which units are overworked or under employed.

The connection between the Series 7700 Computer Performance Analyzer and your computer is a set of universal high impedance probes, that do not in any way interfere with your system operation.

Documentation

With each Series 7700 Computer Performance Analyzer, CPA provides application instructions and full systems documentation. In fact, present users tell us the manuals alone are worth the price of the unit.

People

The people who run the Series 7700 can be your people or our people. Our complete documentation shows your people exactly how to use the system. But if you'd like, our people will come around to help with the analysis. It's all negotiable.

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2841 Disc Control Unit in January, 1970.
2401-3 90KC Tape Unit immediately.
1401 C-3 System with 1402, 1403 II immediately.
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DEC started just twelve years ago with little more than hope and expectation. Today, we're a dominant force in the small to medium scientific computer markets, and a leader in large scale time sharing applications. We enter the 70's as the third largest computer manufacturer in the world, measured by computer installations, and continue to be the world's leading manufacturer/supplier of logic modules. Sales in the last half-DECade have increased by over 500% to more than 86 million dollars in fiscal 1969. This sales pace is being achieved with business that is ninety percent commercially oriented.

But the past is prologue. Where we'll be ten years from now is dependent upon our computerpeople — people who like working in an environment which recognizes, encourages, and rewards individuality. The Programming positions listed below require nothing but the best people. If you're one, keep reading — the DECade is just beginning.

Senior Systems Programmer. To design, implement and test new software. Will work closely with engineering groups on design of new hardware. BSEE or computer science background with two or more years of systems development experience required.

Diagnostic Programmers. Strong background in logic evaluation and testing procedures required. Will design and implement system diagnostic and reliability programs for our various computers. Desirable qualifications include technical school training with a minimum of four years combined experience in machine language programming and logic design or test.

Product Test Programmers. To design and implement software test procedures for systems and applications programs. BS with heavy emphasis on computer science or equivalent experience.

Local interviews may be arranged.

Forward your resume, in confidence, to Mr. Bruce MacFadden, Professional Personnel, Digital Equipment Corporation, 181 Main Street, Maynerd, Massachusetts 01754. Digital is an equal opportunity employer.

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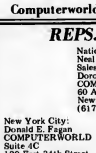

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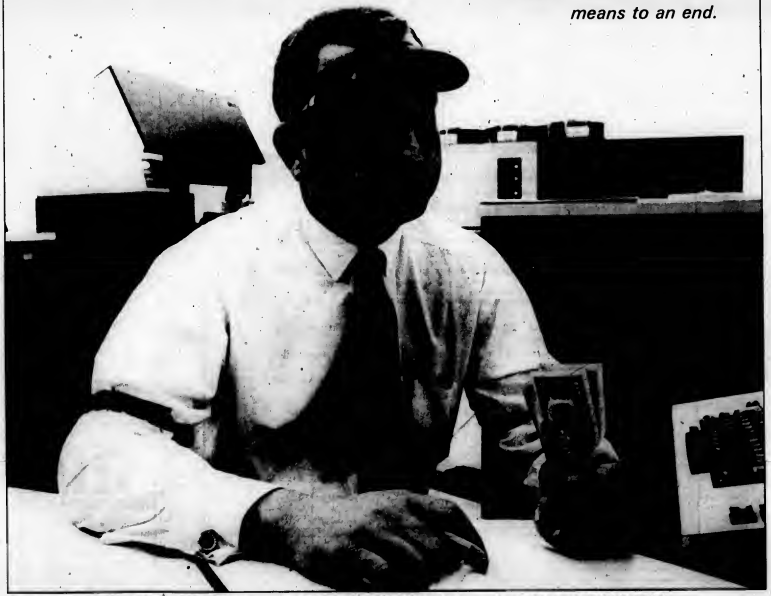

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Trade Shorts

Commonwealth Computing, Inc., of Lexington, Mass., has concluded an agreement with New England Merchants National Bank under which the bank will use Adpac in its data processing systems.

This means that all four of Boston's leading banking institutions are now employing Adpac. The other major banks using the language are First National Bank of Boston, National Shawmut Bank and State Street Bank and Trust Co.

Computer Consoles, Inc., Rochester, N.Y., has been approved for listing on the General Services Administration (GSA) list of authorized suppliers of the U.S. government.

Computer Consoles, founded in 1968, manufactures and markets business information systems.

Vendere International Marketing Corp., Torrance, Calif., has signed an exclusive agreement with Computer Input Corp. to market its services nationwide.

Computer Input Corp., a subsidiary of Unionamerica, Inc., offers keypunching and key-verifying services throughout the U.S. supported by production facilities in Thailand and Taiwan. Volume input generation requirements are prepared computer ready on formatted output tapes.

General Computer Systems' Data/Tape 2100, an on-line multiple keyboard-to-magnetic tape data entry system, will be sold in Canada and Europe through an international distributor organization.

Named to handle the foreign distribution of the system was Interscan Data Systems, Ltd. The company has sales offices in Toronto, London, Rossertstrasse, Germany, and Nassau.

Potter Instrument Co., Inc., has opened Potter Instrument Co. GmbH, to be located in Vienna, Austria. This Potter European organization will include complete manufacturing, sales and service activities. Initially, the company will manufacture their line of magnetic tape transports for sale throughout Europe. Plans call for the manufacture of the complete line of Potter data processing peripheral equipment within a very short time.

Banca Nazionale del Lavoro, the fourth largest bank outside the U.S., according to *Fortune* magazine, has formed (through its subsidiary, S.A.G.A.) a joint-venture corporation with Corporation S, Dallas, to establish an optical input automation (Optimation) center in Rome.

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West European Market Grows 40%

LONDON – While the growth in the computer head count has slowed to 30% from 40% in 1969, dollar value of new computers installed in the rapidly expanding Western European market has continued to expand at the 40% rate.

According to the *EDP Europa Report*, 1969 sales of computers in Europe may reach $2.5 billion, up 39% over the $1.8 billion sales of 1968, and nearly doubling 1967's $1.3 billion.

These estimates are for general purpose DP machines, and do not include process control, peripheral, or minicomputer markets, which the report said "are booming."

The report added that the six nations of the Common Market accounted for two-thirds of the sales.

The slack growth rate of number of new installations is due to a swing toward larger installations and economic pressures in late 1967 and 1968 that held back orders.

The European market is becoming sophisticated, and "it will never have the dead wood of dedicated machines used on a single shift basis" as are perhaps 60% of installations in the U.S.

Also European users "will never" to the same extent be dependent on second generation programs and emulators as their counterparts in the U.S." the report maintains.

As in the U.S., IBM dominates the European market, selling about 56% of the computers in Western Europe.

British International Computers, Ltd., (ICL), holds about 19% of the market in numbers of installations, but probably closer to 12% in terms of value, "a position resulting from overselling the under profitable 1901 model" according to the report.

The remaining 25% of the market is split between nine companies: Univac, GE, Honeywell, Philips, Burroughs, NCR, CII, XDS, and Control Data.

Describing its prediction as cautious, *EDP Europa Report* predicts a total market of $3 billion in Western Europe in 1970.

Computest Corp. Net Rises 50%, Sales Grow 70% in First Half

CHERRY HILL, N.J. – Computest Corp. reported net income of $297,000, equal to 32 cents per common share, on sales of $4,536,000 for the six months ended Nov. 30, 1969.

Computest President Richard O. Endre announced that this compares to earnings of $199,000, or 21 cents per common share, on sales of $2,685,000 for the comparable six months a year ago.

The current figures represent an improvement of 49.2% in earnings on a sales increase of 68.9%.

Per share earnings were computed on the basis of an average of 931,282 common shares outstanding during the recent six months, compared with an average of 928,454 common shares outstanding last year.

Current sales and earnings figures set new records for the computer memory test equipment maker. The current six month results reflect a research and development charge of $563,000 as compared to $380,000 for the first half last year.

Earnings for the second quarter ended Nov. 30, 1969 were $195,000, equal to 20 cents per common share, on sales of $2,668,000. This can be compared with earnings of $153,000, equal to 16 cents per common share, on sales of $1,614,000 for the second quarter last year.

In a letter to shareholders, Endres attributed the advances for the half to the company's Computer Test subsidiary which has benefitted from continued expansion of the computer industry as well as growing demand for enlarged computer memory capability, all of which resulted in increased sales of the subsidiary's memory test equipment.

CTC continued substantial shipments to customers in Europe and Japan, two areas which each account for approximately 15% per year of the subsidiary's business.

Concurrently, CTC expanded its West German sales service operation to enable it to provide direct sales representation in the European market.

Endres said that progress of two of the company's smaller operations, Microdyne Instruments Inc. and Communications Technology, Inc. (CTI), had been hampered somewhat in the second quarter by adverse economic factors. Microdyne manufactures integrated circuit test equipment and CTI manufactures communications terminal equipment.

The Computest president said that based on present conditions he expected fiscal 1970 to be a record year for the corporation as a whole, but that present economic factors could lead to modestly tempered growth next year. He observed, however, that long term prospects continued favorable.

Burroughs Reports 1969 Sales Boomed

Detroit – A 38% increase in EDP backlog highlighted a record breaking year end report by Burroughs Corp.

Company President Ray W. MacDonald stated that audited net earnings for 1969 were $55,199,000, a 27% increase over 1968's 43,301,000.

1969 per share earnings were $3.32 as opposed to $2.64 in 1968.

MacDonald reported that worldwide commerical orders grew 20% while government contract custom orders fell 29%, resulting in a total growth of 14% in incoming orders for 1969.

Total revenues for the company were $759 million, up 16% over 1968's $655 million. Fourth quarter earnings were $1.49 per share, up 25%, while revenues for the quarter rose 18% to $242 million.

Orders for accounting machines and systems and small application machines also showed a moderate increase over 1968 orders.

MacDonald said "World-wide backlogs at year end 1969 have reached new high levels with an increase over our position at the beginning of the year of 23%."

Other record highs the company reached in 1969 were research and development expenditures of over $37 million, up 42%, and cash flow, or funds provided from operations, of $7.32 per share, which compared to $5.56 in 1968.

Gross capital expenditure was about $230 million, of which over $103 million was for new plant acquisition.

Per share figures are based on an average of 16.637 million shares outstanding in 1969 as opposed to 16.428 million in 1968. MacDonald said that figures for 1968 had been restated to reflect a stock split in March, 1969.

The Burroughs president predicted continued new records in 1970.

One of Burroughs' largest customers is the Air Force. The $115 million Phase II program began in 1969, boosting sales of the B3500. Congress is now investigating cutting back on this program.

ITN Will Buy Assets Of Ailing Matrix Corp.

New York – Ailing Matrix Corp. has been saved.

The Los Angeles-and Boston-based time-sharing company, whose stock has been quoted at less than $1 recently, has reached an agreement to be acquired by International Telecomputer Network, another time-sharing and DP service company.

The agreement in principle states that ITN will acquire "substantially all of the assets of Matrix" for 400,000 shares of ITN stock. ITN was recently quoted at 5-1/2 bid, meaning that ITN will be paying roughly $2.2 million for Matrix.

The exchange is subject to the approval of Matrix shareholders.

The number of shares to be exchanged may be increased by as much as 100,000 additional shares, depending on Matrix's performance.

ITN, which first went public in June, 1969, offers time-sharing and batch processing by wire from its clients' terminals. They also have a library of over 200 proprietary programs and applications for business, scientific and financial use.

Matrix recently obtained a time-sharing contract with McDonnell Douglas, guaranteeing it at least $300,000 in income.

Computerworld removed Matrix Corp. from the CW Trading Summary last week because of the failing revenues of the company.

URS Systems Corp. was reported likely negotiating to buy Matrix for $1.25 million, but broke off negotiations several months ago.

For the year ended Dec. 1, 1968, Matrix rang up a loss of $1,724,750, and a net loss of $4,575 for the quarter ended March 31, 1969.

Univac Wins Big UCC Sale

Dallas – Sperry Rand's Univac division has scored a major marketing triumph.

Univac has received a contract from University Computing here to sell UCC $36.3 million of Univac 1108 computers and related communications subsystems.

The contract calls for an outright purchase of $15.2 million and an option to buy $21.1 million more in March, which UCC says it intends to exercise.

UCC announced that it is increasing to $60 million the principle amount of a 25-year subordinated debenture offering that it registered with the SEC last November to help pay for the new equipment.

The $20 million additional revenue will also be used to pay LTV Aerospace for a 35.5% interest in Computer Technology Inc. The bond issue will be used to retire bank debt as well.

UCC announced that the equipment it will purchase is currently leased to various federal agencies and is used in a government network.

ITEL Merger Wins Directors' Nod, Debenture Issue Seen

SAN FRANCISCO – Directors of both ITEL Corp. and Intercontinental Systems, Inc. (Palo Alto) have approved an agreement whereby ITEL will acquire Intercontinental through an exchange of common stock under the terms made public on Dec. 30, 1969.

Peter S. Redfield, ITEL president, said that ITEL plans a public offering of about $20 million of convertible subordinated debentures scheduled to occur simultaneously with the consummation of their merger.

Redfield also stated that ITEL expects to file a registration statement covering this offering with the SEC by the end of January.

Under the terms of the agreement announced on Dec. 30, 1969, shareholders of Intercontinental will receive initially 0.4 share of ITEL common for each share of Intercontinental held, with the possibility of up to 0.6 additional share based on Intercontinental's 1970 earnings.

Intercontinental presently has 2.1 million common shares outstanding.

The acquisition is subject to approval by shareholders of both companies who will vote on the agreement at separate meetings to be held in late February. Assuming favorable approval by shareholders, the acquisition is expected to be completed early in March.

Intercontinental, under the "Dura" trademark, develops, manufactures and markets a line of data handling equipment including electronic typewriters, computer terminals and text editing devices. Intercontinental sells and services Dura products through an international sales and maintenance organization of more than 150 offices.

ITEL is one of the larger diversified companies in the data processing industry. ITEL's Data Processing Division is a commercially oriented computer service and software development company offering computerized accounting packages, including accounts receivable and payroll services, to small businesses.

SSI Computer Corp., an ITEL subsidiary, is one of the major lessors of IBM System/360 computers with about $200 million of equipment on lease.

Diablo Systems, Inc., an ITEL affiliate, is a new manufacturer of computer peripheral equipment.

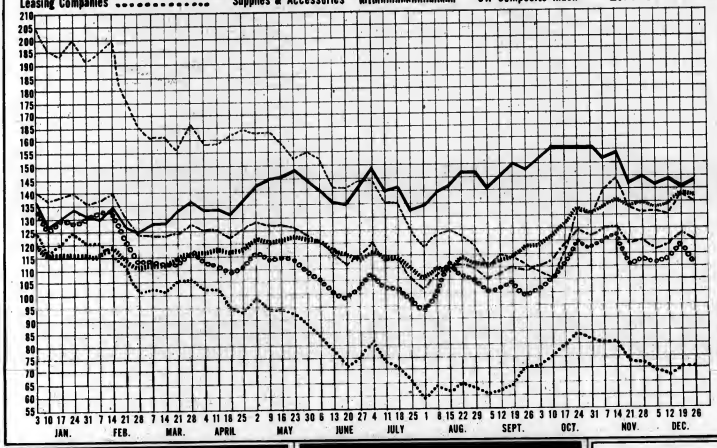
Telex Listed on NYSE

NEW YORK – Telex Corp. is now a Big Board stock.

Formerly carried on the American Stock Exchange, the Tulsa, Oklahoma, firm has been admitted to listing on the New York Stock Exchange.

Telex is a diversified manufacturer of computer products, instrumentation, communications equipment, and home entertainment products.

COMPUTERWORLD STOCK TRADING SUMMARY OF 1969



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Earnings Reports

COMPUDYNE CORP.
Year Ended Sept. 30

	1969	a1968
Revenue	$31,109,000	$18,173,000
Earnings	b705,000	310,000

a-Restated to include acquisitions on a pooling-of-interest basis; b-Includes tax credit; amount not disclosed.

DATRONIC RENTAL CORP.
Three Months Ended Sept. 30

	1969	1968
Shr Ernd	$.11	$.12
Revenue	690,472	682,172
Earnings	71,228	65,016

ELECTRONIC CONTROLS, INC.
Nine Months Ended Sept. 30

	1969	1968
Shr Ernd	$.075	$.17
Revenue	880,000	740,000
Earnings	25,000	57,500

INFORMATION INTERNATIONAL
Six Months Ended Oct. 31

	1969	1968
Loss Per Shr	$.04	$.02
Revenue	611,946	510,181
Loss	91,014	34,668

This report is unaudited.

SCIENTIFIC RESOURCES
Year Ended Sept. 30

	1969	a1968
bRev	$48,716,894	$11,285,558
Net Cont Op	528,850	d3,037,310
Loss Disc Op	3,201,411	3,951,027
Spec Chg	e858,998	c2,610,705
Loss	3,531,559	4,377,632

a-Restated to treat Atlas Financial Corp. as a discontinued operation since subsidiary is being sold; b-From continuing operations; c-Gain from sale of Commonwealth United Corp. securities; d-Loss; e-From settlement of lawsuit against Atlas Financial and loss on sale of property.

COMPUTER STOCKS: TRADING SUMMARY

NYSE AND ASE CLOSING PRICES JAN. 16; OTC, JAN. 15

COMPUTER SYSTEMS

EXCH	'69-'70 CLOSING RANGE	PRICE		WEEK NET CHANGE	WEEK % CHANGE
N	170-120	164 1/8	BURROUGHS CORP	- 5 1/8	- 1.37
N	4-0.9-	30	50 5/8 CONTROL DATA CORP	- 4 1/2	- 12.81
A	139-	98	98 5/8 CONTROL SYSTEMS CORP	- 17 3/4	- 15.24
A	122-	54	118 DIGITAL EQUIPMENT	+10 5/8	+ 9.10
A	23-	3	10 1/8 ELECTRONIC ASSOC.	+ 1	+ 5.81
N	98-	73	74 3/8 GENERAL ELECTRIC	+ 1 1/4	+ 1.71
N	114-	75	108 3/4 HEWLETT-PACKARD CO	+ 2 1/4	+ 2.11
N	157-	107	145 1/2 HONEYWELL INC	+ 3 1/2	+ 2.46
N	337-	291	309 3/4 IBM	+ 4	+ 1.30
N	173-	108	186 ICT	+ 3 1/4	+ 2.00
N	48-	31	31 7/8 RCA	+ 1 3/8	+ 4.52
N	30-	27	28 1/4 RAYTHEON CO	- 2 1/4	- 8.87
A	9-	1	6 1/4 SCI. CONTROL CORP.	- 1 3/4	- 21.87
N	53-	36	36 1/8 SPERRY RAND	+ 2 1/8	+ 5.30
A	93-	26	45 1/8 SYSTEMS ENG. LABS	- 1/8	- 0.28

PERIPHERALS & SUBSYSTEMS

EXCH	'69-'70 CLOSING RANGE	PRICE		WEEK NET CHANGE	WEEK % CHANGE
N	83-	55	55 7/8 ADDRESSOGRAPH-MULT	- 2	- 3.46
O	71-	10	10 1/4 ALPHANUMERIC	+ 3/4	+ 7.89
N	53-	34	51/2 DIEBOLD INC	- 3/8	- 0.68
O	19-	9	10 1/2 DIELECTRONICS & RESH	- 1/4	- 2.33
N	17-	9	13 1/8 DIGITRONICS	-----	-----
A	37-	18	24 5/8 CALCOMP	+ 1/2	+ 2.08
O	38-	11	13 1/4 COMPUTRONICS	- 1/4	- 1.85
A	16-	7	11 COMPUTER EQUIPMENT	- 1/2	- 4.35
A	27-	12	26 DATA PRODUCTS CORP	+ 1/2	+ 2.15
O	22-	12	12 3/4 DIGITRONICS	+ 1/2	+ 4.09
N	53-	32	34 7/8 ELECTRONIC M & N	- 1/4	- 0.71
O	18-	7	7 7/8 FABRITEK INC	+ 1	+ 14.55
O	37-	15	16 FARRINGTON MFG	- 3/4	- 4.68
O	21-	10	15 INFORMATION DIS	+ 1/2	+ 3.70
A	80-	17	75 MICRO ELECTRONICS	+ 3	+ 5.05
A	139-	77	132 3/4 MOHAWK DATA SCI.	+ 5 1/4	+ 4.60
O	11-	4	5 OPTICAL SCANNING	-----	-----
O	33-	23	33 PAYTON	+ 1 3/4	+ 10.97
O	38-	25	32 3/4 POTTER INSTRUMENT	+ 3 1/2	+ 9.68
O	87-	34	36 RECOGNITION EQUIP	+ 6	+ 8.11
N	45-	22	25 SANDERS ASSOCIATES	- 3 1/8	- 11.11
O	83-	28	61 SCIO MFG	- 1	- 1.82
O	36-	13	19 1/2 TALLY CORP.	+ 1	+ 5.41
N	115-	83	111 1/8 XEROX CORP	+ 4 1/4	+ 3.98

SUPPLIES & ACCESSORIES

EXCH	'69-'70 CLOSING RANGE	PRICE		WEEK NET CHANGE	WEEK % CHANGE
O	47-	31	43 ACME VISIBLE	-----	-----
O	22-	11	15 3/8 ADAM ELLIS CORP	- 1/8	- 0.79
O	27-	20	20 1/2 DALTHONE DIS FORM	- 1/2	- 2.38
A	24-	17	24 DEBBY WRIGHT	+ 3/4	+ 3.23
O	44-	26	32 3/4 DATA DOCUMENTS	- 1/2	- 1.50
O	18-	12	13 3/4 ENNIS BUS. FORMS	+ 1/4	+ 1.85
N	173-	65	110 1/4 HEWDEN	+ 3 1/2	+ 3.29
O	13-	4	14 1/4 IRI COMPANY	- 2	- 12.77
O	33-	23	33 MOORE BUS FORMS	+ 1 1/4	+ 3.90
A	44-	30	33 3/4 NASHUA CORP.	+ 1/4	+ 0.75
O	48-	30	47 1/2 REYNOLDS & REYNOLD	+ 1/4	+ 0.53
O	51-	23	29 STANDARD REGISTER	+ 1/2	+ 1.74
N	38-	25	36 1/4 UARCO	+ 1/4	+ 0.69
A	24-	10	22 3/4 UNION INDUSTRIES	+ 3/4	+ 3.41
O	40-	28	39 1/2 WALLACE BUS FORMS	+ 1/2	+ 1.23

SOFTWARE & EDP SERVICES

EXCH	'69-'70 CLOSING RANGE	PRICE		WEEK NET CHANGE	WEEK % CHANGE
O	14-	4	5 1/2 ADVANCED COMP TECH	+ 1 1/2	+ 30.00
A	57-	43	23 7/8 APPLIED DATA RES.	+ 1/4	+ 1.10
O	11-	6	6 3/4 AMIES	+ 1/4	+ 6.89
A	14-	4	5 1/2 AUTOMATIC DATA PRO	+ 2 1/4	+ 5.20
O	16-	12	12 BOWNE OF HOUSTON	+ 1/2	+ 11.11
O	17-	7	9 BRANNON APPL SYS	- 1/4	- 2.70
A	21-	9	9 1/2 COMPUTER APPL	+ 2 1/4	+ 17.15
O	18-	6	14 COMPUTER ENVIRON	- 1/2	- 3.45
O	47-	11	12 1/2 COMPUTER NETWORK	-----	-----
N	34-	19	31 COMPUTER SCIENCES	- 3/4	- 1.78
O	40-	7	7 3/4 COMPUTER USAGE	- 1/4	- 3.12
A	75-	57	71 7/8 COMPUTING & SOFT	+ 4 3/8	+ 6.48
O	26-	3	6 1/2 DATAPRODUCTS SERVICE	+ 2 3/4	+ 73.3
U	17-	7	7 1/4 DATATAC	+ 3/4	+ 11.54
O	15-	5	5 1/2 DIGITEC	-----	-----
A	38-	7	10 5/8 ELECT COMP PROG	+ 1/2	+ 1.19
O	50-	12	15 1/2 INFONET	+ 1/2	+ 2.50
O	22-	4	8 MAT CO OF ANALYSTS	+ 1/4	+ 3.23
N	51-	23	43 3/4 PLANNING RESEARCH	+ 3/4	+ 1.50
O A	11-	1	3 PROGRAMMING & SYS	+ 1	+ 25.00
O	10-	1	2 1/2 SOFTWARE SYSTEMS	- 3/4	- 17.43
O A	37-	7	5 1/2 STRATEGIC SYS	+ 3/4	+ 27.27
O	36-	11	20 TBS COMP SERV INC.	-----	-----
O A	17-	1	4 3/4 UNITED DATA CENTER	+ 1/4	+ 5.56
N	153-	53	81 1/8 UNIVERSITY COMP.	- 13 1/2	- 14.30
O A	38-	22	23 1/2 URS SYSTEMS	- 1	- 11.32
O A	16-	8	9 1/4 U.S. TIME-SHARING	- 1 1/2	- 13.95

LEASING COMPANIES

EXCH	'69-'70 CLOSING RANGE	PRICE		WEEK NET CHANGE	WEEK % CHANGE
O A	14-	7	8 7/8 DANLESTER CORTEN	+ 1/8	+ 1.43
O	43-	22	23 DONTHE CO-VESTER	+ 1 1/4	+ 5.16
O	18-	4	8 1/4 CO-VESTER EXCHANGE	+ 1 3/4	+ 26.92
O A	16-	10	16 1/2 CO-VESTER LEASING	- 1/4	- 1.71
O	13-	7	13 CYBER-TRONICS	+ 1	+ 7.14
O	40-	25	26 1/2 DATA PROC. F & O	+ 1 1/8	+ 13.67
O	10-	2	5 3/4 HARTRONIC RENTAL	- 1/4	- 4.17
A	52-	20	26 1/8 HEADRONIC COMPUTER	+ 1 1/8	+ 2.35
A	16-	8	8 7/8 GPA, INC.	- 3/4	- 7.79
A	45-	16	13 1/4 GRANITE IDT	-	- 4.76
A	28-	12	12 3/4 GREYHOUND COMPUTER	- 1/4	- 1.92
A	34-	22	24 3/4 LEASED DATA PROD.	+ 1 1/4	+ 5.31
O	9-	4	5 3/8 LECTRO COMP LEAS	+ 1/2	+ 9.62
A	57-	16	15 1/8 LEVIN-TOWNSEND COMP	+ 2 7/8	+ 15.49
O	8-	1	3 3/8 LINC DATA, INC.	+ 1	+ 42.11
O A	14-	2	5 5/8 MANAGEMENT ASSIST	- 1/8	- 2.17
O A	12-	6	7 1/2 NCC LEASING	- 1/4	- 3.23
O	34-	5	7 3/4 SYSTEM CAPITAL	- 1/4	- 3.13
A	20-	13	16 U.S. LEASING	- 7/8	- 5.19

C&S Reports 4th Year of Record Results

LOS ANGELES – Computing and Software, Inc. reported its fourth consecutive record year in sales and earnings.

Earnings per share in fiscal 1969 reached an all-time high of $1.11, a 52% gain over the 73 cents for the prior year.

Net income for the year ended Oct. 31, 1969 advanced to $4,155,000, compared with $2,687,000 recorded for the prior year. Sales for fiscal 1969 rose to $64,420,000 from $53,377,000 in fiscal 1968.

All 1968 figures have been restated to reflect acquisitions made on a pooling of interests basis.

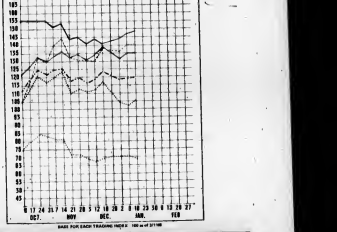
The 1968 figures also include $218,000 or 6 cents per share for a non-recurring federal income tax reduction from carryforward of prior years' operating losses of a pooled company.

Computer Memory Firm Gets $1.5 Million Cash

PHOENIX, Ariz. – A private placement valued at $1.5-million has been completed for Computer Memory Devices, Inc., Glendale, Ariz.

The financing was managed by White, Weld & Co., and was placed under the direction of Peter Whitmore Wallace, San Francisco-based vice-president of White, Weld.

"Our penetration of the OEM market with our basic computer memory disk drive, plus the acceptance of new products has accelerated our planned growth, and has made manditory expansion in all areas of the company," said Eugene Perry, president.



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This announcement is neither an offer to sell nor a solicitation of an offer to buy any of these shares. The offering is made only by the Prospectus.

January 9, 1970

New Issue

250,000 Shares

Computer Software Systems, Inc.

Common Stock
(Par Value $.02 per Share)

36,000 shares of Common Stock are being reserved for sale at the public offering price to designees of the Company. To the extent such shares are purchased, the number of shares offered to the public will be reduced.

Price $14 per Share

Copies of the Prospectus may be obtained in any State only from such of the underwriters, including the undersigned, as may lawfully offer these securities in such State.

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